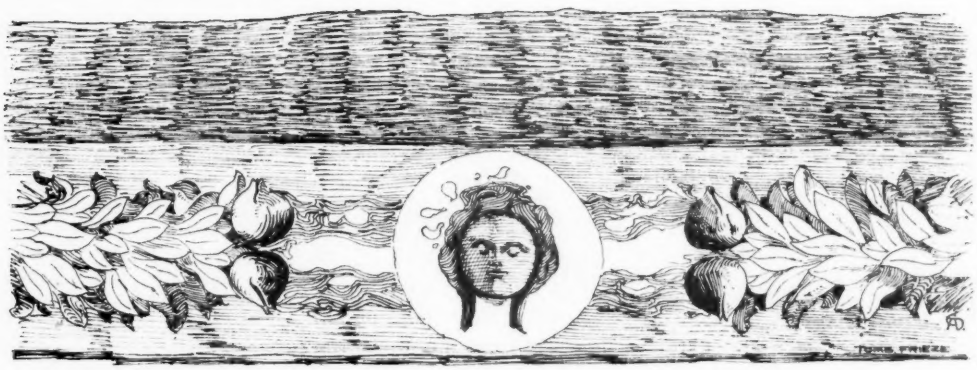


SOME EARLY CHRISTIAN CHURCHES IN PALESTINE.

By Arch. C. Dickie [A.].

Read before the Royal Institute of British Architects, Monday, 6th March 1899.

THE title of my Paper, "Some Early Christian Churches in Palestine," was chosen because of the difficulty in deciding at the moment what particular example, or examples, I should write about. Jerusalem is rich in these remains; many have been studied, and many more have only been favoured by passing notice, while there are still more to be discovered, hidden in the confusion of the city or buried by the accumulated *débris* now under cultivation without the walls. I shall, therefore, limit myself to a few churches in and about the city. Time and wantonness have left little to look upon, and a recovery of the plans is about the most that can be hoped for. Almost without exception, there is no single example existing in its original form, sufficient to convey to the casual observer any idea of what it once was. It is rare even to find a complete plan, and still rarer to find as much masonry standing as would give an impression of the original structure. The fanatical Chosroes, with his Persian hordes and Jewish allies, in the beginning of the seventh century, destroyed all within their reach, and the later buildings suffered in accord with the vicissitudes of the city's history. There is nothing which seems more hopeless than the attempt to trace a wall which dodges under a heap of *débris*, or becomes lost behind a more modern building. Sometimes it forms the interior of a house, where its detail is hidden by a thick coat of plaster, or adorns the sacred side of a domicile whose door even backsheesh will not open to you. The resources of a 50-foot wall, which has determined to play hide-and-seek with you, are great, and the clever way in which it effectually hides itself just at the most important point is a sore trial to architectural research. Most of these remains are of tiny churches, whose extraordinary variety of plan adds interest to their study and atones for the scantiness of the ruins.

The examples I have selected for discussion are the church of St. John the Baptist, eleventh century; an Armenian mortuary chapel, sixth century; and the church of the Pool of Siloam, fifth century.

Before putting these on the screen, I feel bound to say a word on the great cathedral church of the Holy Sepulchre. This wonderful building is far too vast a subject to do justice to in a paper which is devoted chiefly to a comparison of plans, and affords matter for a special paper by whoever may some day unfold its architectural story. Personally, I have, in my attempt, issued in more hopeless uncertainty than when I began, and shall therefore only

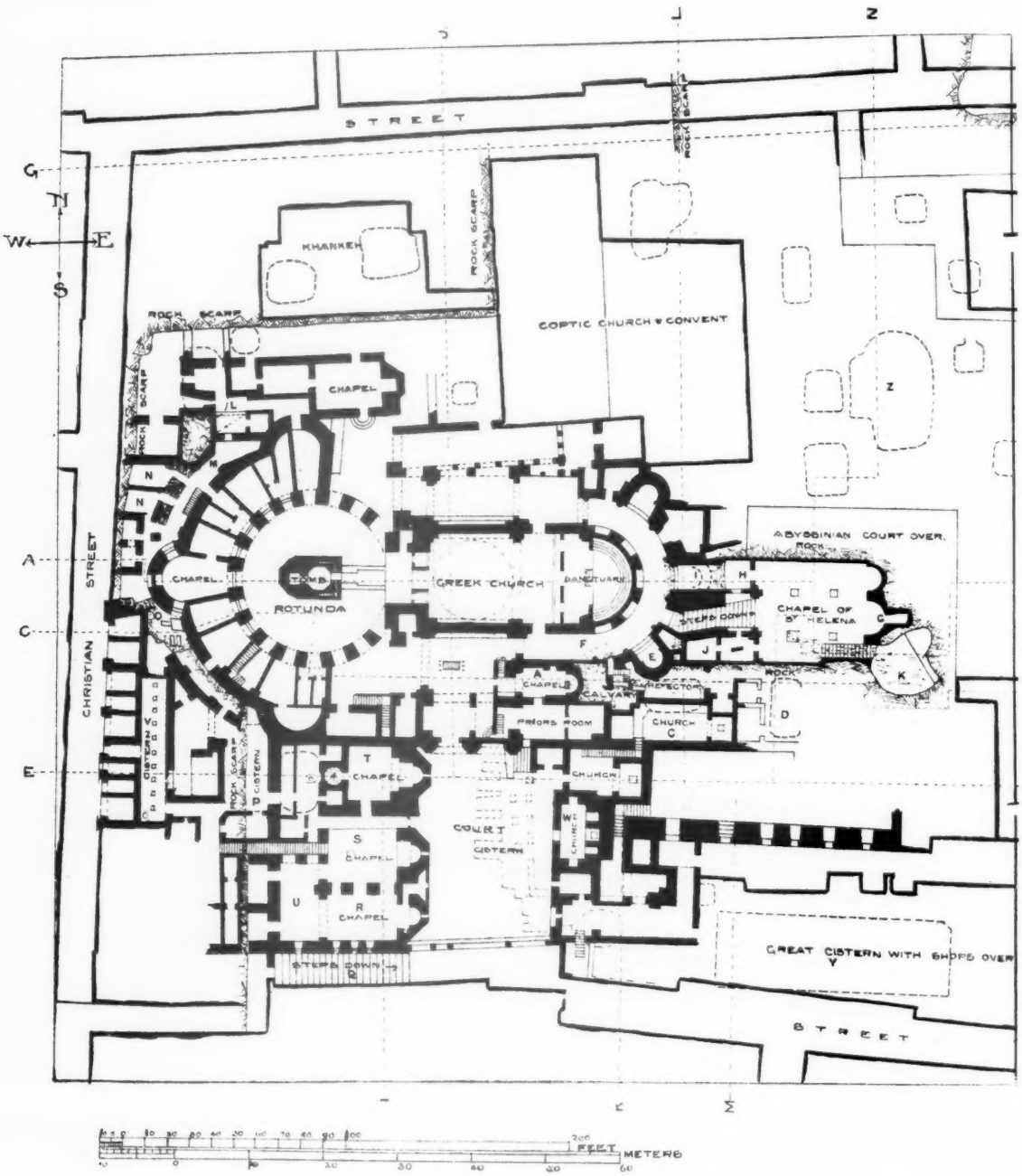


FIG. 1.—PLAN OF THE CHURCH OF THE HOLY SEPULCHRE, JERUSALEM. (From *Ordnance Survey and Additions*, by Dr. Schick.)

touch lightly on the subject, which is forced upon me by reason of its existence as the most important and most interesting early Christian church in Jerusalem.

Briefly, its history is as follows:—Constantine in the fourth century built a basilica over the site of the discovery of the true cross by Queen Helena, and a rotunda over the Holy Sepulchre, which seems to have been separated from the basilica by a cloister. These were burned and destroyed by the Persians in 614 A.D., and partly restored by Modestus soon after, with the addition of a chapel over Calvary and a chapel to the Virgin Mary. Arculf, who writes in the seventh century, gives a plan of the buildings showing the rotunda isolated, and between it and the basilica the chapel over Calvary and the chapel of St. Mary. The buildings were again destroyed and restored in the ninth and tenth centuries, and totally destroyed in 1010 A.D. by the Khalif Hakem. Not long afterwards they were restored, and in the beginning of the twelfth century the restoration of the Crusaders made the church much as we now see it. The chapels about the rotunda were then under one roof, instead of being isolated, and the site of Constantine's basilica is partly occupied by a cloister. Architecturally, the more recent researches have added but little to the works of Sir Charles Wilson, Professor Willis, Professor Hayter Lewis, and others. Dr. Schiek has recently contributed valuable records of the rock contours about the site, showing the original level of the rock and the levels of the cutting, proving that the platform, on which the buildings stand, had been cut down out of the rising rock, the lower sides of which were scarped. He has also recovered certain rock cuttings in the rotunda walls. The plan (fig. 1) is that of the present buildings, consisting of a rotunda, in the centre of which lies the supposed tomb of our Lord, and east of this the church extends in a nave and continuous aisle, terminating in an apse and chevet of three chapels; a more or less mutilated extra aisle, terminating in a square chapel, occurs on the north, and in the south aisle lies the chapel over Calvary. East of the apse, and reached by a flight of steps, is the crypt of St. Helena, where the tradition of the discovery of the true cross is located. This chapel lies under the court of the cloister, and its dome rises up through the pavement, at the level of which are the sills of the dome windows. In plan it is three-aisled; two terminate in apses, and one ends by a flight of steps which descends to the chapel of the Invention. The central aisle is divided into three bays by the columns

FIG. 2.—CHURCH OF THE HOLY SEPULCHRE, JERUSALEM: NORTH AISLE.

carrying the dome. The many chapels which are in and around the main church I need not discuss. The plan is curiously irregular in some places, and the distribution of its parts as puzzling as the internal details. A greater confusion of "additions and alterations" or a

FIG. 3.—CRYPT OF ST. HELENA. (From a water-colour drawing by Arch. C. Dickie, 1897.)

more unhappy conglomerate of beauty and garishness could not well be imagined. In the north aisle are three distinct colonnades standing, of different spacing, set one in front of the other, and each more or less independent of the other. The latest is probably the work of the twelfth century, and the two earlier colonnades may be the remains of the tenth-

eleventh century restoration. This strict preservation of the earlier remains is very striking. Nor is it confined to the north aisle alone; everywhere there is evidence of a determination to preserve the existing ruins, in spite of the fact that their frailty made them useless, and that they were different in plan. The sacredness of every stone seems to have been kept in the minds of the successive builders, who preserved where they could not utilise.

The rotunda is the restoration after the fire of 1808, and is more or less in its original form, except that all the piers are square. According to Sir Charles Warren in *The Temple or the Tomb*, the remains of some of the original shafts still exist, cased by the masonry of the square piers. The present dome was completed in 1867. The crypt of St. Helena is a particularly interesting mixture of stolen materials. Four shafts, fragments of various

FIG. 4.—CHURCH OF THE HOLY SEPULCHRE, JERUSALEM, FROM ROOF OF CONVENT.

coloured marbles, set on irregular bases and capped by beautifully designed Byzantine capitals, three sizes too big, chipped off to fit the necks of the shafts, carry pointed arches and a dome with pendentives. The piers built against the rock walls are, I fancy, the earliest remains of the church, and the caps correspond in character to those of the earliest square pier of the north aisle already mentioned. The damp gloom of the aisles and the play of light from the dome windows give a unique charm to this quaint little interior, and make it a place of many impressions. The south façade is the only exterior part visible of the twelfth-century work. It is a thing of real beauty, but, unfortunately, it is also incomplete, and the full effect of the original composition is lost by the later insertion of a very beautiful tower on its west flank. The pointed arches, the delicate blending of classic and Gothic detail, and the exquisitely carved Byzantine foliage, add interest to its beauty, and the strong Provençal smack about it betrays the inspiration of its designer. It is difficult to believe that this and the loose and debased carving of the aisle capitals are by the same hand; they are very different in

character, and point to other influences. Seen from the housetops the façade, with its domes and tower and the Mahommedan minaret in the foreground, is the most charming group of the city; the rich tawny colour of the weathered stone and the lead and white domes set in bright sunlight against the intense blue Syrian sky form a picture to be remembered. In front are the remains of an atrium, the column bases of which are *in situ*. The ruins of the eastern portico of Constantine's basilica and part of the east wall with the dowel holes for the marble facing can be seen partly preserved in the Russian chapel to the east, and partly in the shops of the bazaar, hidden behind a filthy miscellany. These facts have been very carefully gathered by Mr. Geo. Jeffrey, a Fellow of the Institute. The remains are only those of the east end, and the limits of Constantine's buildings have yet to be recovered, but sufficient is now known to indicate the position and greatness of the original church, which was destroyed by the Persians 614 A.D.

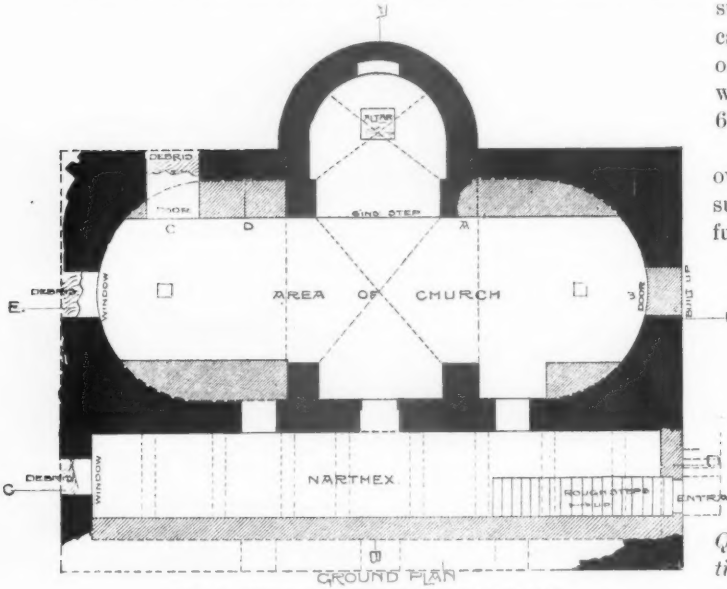


FIG. 5.—CHURCH OF ST. JOHN THE BAPTIST, JERUSALEM.
(Measured and drawn by Arch. C. Dickie, 1897.)

It seems absurd to pass over this great monument in so superficial a manner, but its further discussion is beyond the scope of the present Paper, and might lead to depths in which there would be much helpless wallowing.

The next three examples are interesting types of early church plans, which are as yet comparatively unknown outside the pages of the *Quarterly Statement of the Palestine Exploration Fund*.*

The church of St. John the Baptist lies on the way to the church of the Holy Sepulchre, in Christian Street, adjacent to the Pool of Hezekiah. In 1865 Sir Charles Wilson reported this church in the survey of Jerusalem, but it was not until recently that it was measured up in detail. Over the original church a modern one has been built, very nearly on the same plan, and the ancient building now takes the place of a crypt, the surface of the ground being now at the level of the upper church floor. The section through the church and the Pool of Hezekiah is taken from a drawing by Dr. Schiek, and shows the relative positions and levels as well as the original rock level and the level of the present street. The lower church is reached by a rude flight of steps on the south side descending into a narthex, from which three doors enter the main building. The windows are now blocked up by *débris*, and one has to depend upon the light of a candle in studying the masonry. It is quite evident, at first sight, that the restorer has been at work, but just how much he is responsible for is not so easily determined when one's vision is limited to the area afforded by the light of a tallow candle. However, I think the plan may be taken as

* The slides and drawings exhibited at the Meeting were kindly lent by the Palestine Exploration Fund.

correct, as there is abundant evidence in the bonding and character of the masonry to justify its acceptance. The late work, shown by hatched lines, hides the true form of the original church, which is triapsidal, divided into three bays by four attached piers at the crossing. The total length of the church north and south is 62 feet 9 inches, and the width 24 feet 9 inches, which the later wall thickening has reduced to 16 feet 6 inches. The west wall of the narthex is 6 feet 10 inches thick, which excessive thickness may be accounted for in the same way, and thus explain the absence of any evidence of the western entrances, which are restored by dotted lines on the plan opposite the three inner doorways, and which, at that time, would have been rendered useless on account of the accumulated *débris* 21 feet above the level of the original floor. Another doorway exists in the south end of the church, now built up. The floor of the eastern apse is raised 6 inches, and the original window is now formed into a recess. The altar stands complete, a rubble pedestal, 4 feet 1 inch by 3 feet 5 inches, by 3 feet 4 inches high, covered with a flat stone 11 inches thick. The present vaulting is late pointed, the centre bay having intersecting vaults and the flanking bays plain vaults.

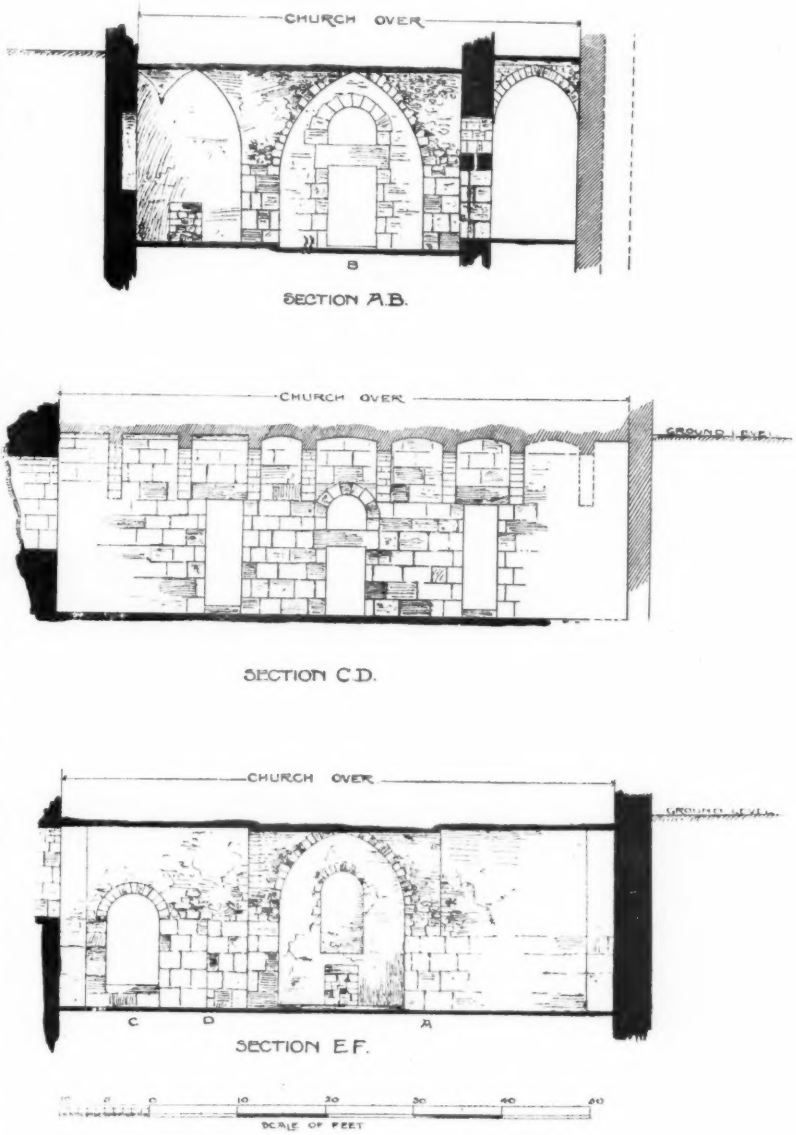


FIG. 6.—CHURCH OF ST. JOHN THE BAPTIST, JERUSALEM.
(Measured and drawn by Arch. C. Dickie, 1897.)

A close examination of this vaulting convinces me that it has been constructed in the

same way as the natives construct the vaults at the present day—viz. by a rude centering of timber, brushwood, and earth, modelled to the form of the vault, and then completed in concrete of stones and lime thrown quickly over the centering and left to dry. The vaulting of the narthex is also late, and the ribs are irregularly spaced to suit the positions of the doorways then existing. Under the floor of the church is a crypt, which I was unable to explore. The whole plan and details are charmingly simple and effective. The proportions are pleasing, and give a dignity and greatness difficult to imagine in such a tiny structure, and it is a matter of regret that the remains of the west front lie hidden by a mass of *débris*, which in all probability will never be removed. The arrangement of plan is very similar to the tenth-century church of St. Elias at Thessalonica, as drawn and described by Texier and Pullan; but the four piers in the middle bay do not, even remotely, form a square, and it is doubtful whether they ever carried a dome, and suggest a tower treatment as seen in the small triapsidal churches in Normandy.

It seems difficult to believe, but it is none the less true, that the "jerry" builder has found his way even to Jerusalem. The influence of ancient tradition is, however, too strong to allow his cupidity a free course, and he must needs still build up to a certain massive standard for the sake of his honour—as he loves to call it. But for that, he might risk a good deal, and although he may not for some time attain such perfection as our local breed, he is steadily progressing towards that high state, and is naturally endowed with every quality essential to perfect success. Hitherto the Arab was conservative and stationary, loving the habits and works of his forefathers, and we have this to thank for what remains of ancient architecture there are still left to us. But he is growing restless, and there is no limit to the excesses which may be perpetrated; the value of property jumps up to a fabulous extent, and fortunes are made on a single deal. It is this which is responsible for the destruction of many most sacred relics. For fear of complications many valuable discoveries are secretly destroyed to make room for the houses of the new fancy, and the hand is at work which may in time turn Jerusalem into a speculative horror. All are not bad, however, and there is at least one man in the city who is fit for better things—an Arab Effendi, who, when excavating the foundations for a new house, came upon one of the most beautiful Byzantine floor mosaics yet discovered. He preserved it by building a cell on the old foundations, and transferred the site of the new house to another quarter.

The floor is that of a mortuary chapel, a tiny rectangular cell 21 feet by 13 feet, with an apse on the east end, evidently of the sixth century. The design is a most exquisite bit of colour, and consists of vine branches growing from a vase on the west end of the cell, formed into circular panels, within which are grapes and birds of almost every description and colour. I shall quote from Dr. Bliss's report on the discovery:—

"The mosaic, which measures about 21 feet by 13, is surrounded by rude rubble walls, plastered on the inside, similar to the walls of the church we discovered on the Mount of Olives. At the east end there is a small apse. The building was founded on the rock, and the *débris* over the walls was hardly more than 3 feet deep. Under the south-west corner is a small natural cave, in which we found human bones, and lamps of the fifth and sixth centuries A.D. That the room is a mortuary chapel is also confirmed by the Armenian inscription, found at the east end, to the effect that the place was in memory of all those Armenians whose name the Lord knows.

"The mosaic is a most elaborate piece of work, the stone tesseræ being of almost every colour. Within a border of the guilloche pattern we observe a vase, from which springs a vine ramifying into branches, on which hang grape-clusters; among the branches are numerous birds, peacocks, ducks, storks, pigeons, fowls, an eagle, a partridge, a parrot in a cage, etc."

Dr. Murray has furnished the following note on the mosaic:

"There is much that reminds me of a late classical spirit, such as we expect in the period between Constantine and Justinian (321–560 A.D.). The general design of a great plant or tree growing out of a vase recalls a mosaic from Carthage now in the British Museum, which can hardly be later than the early part of the sixth century, while, again, the birds enclosed among the branches remind one in a measure of the early Christian sarcophagi. . . . It is true that the habit of enclosing animal forms within circles formed by foliage was very frequent in Byzantine work, but equally it had been there derived from late classic times when drawing was far purer, and more like that of the new

FIG. 7.—MOSAIC IN ARMENIAN MORTUARY CHAPEL, JERUSALEM.

mosaic. The difficulty at present is to reconcile this view of an early date with the Armenian inscription, which forms apparently an original part of the mosaic."

Several mosaics of this class have recently been brought to light in Syria. At Madeba there are pavements of similar character. One consists of a design of trees growing from four angles with animals feeding on the branches; and another fragment outside a church—in which is a mosaic map of Palestine, in detail, of the sixth century—shows a like feeling. The excavations of the British School at Melos have laid bare an elaborate pavement of five panels within a treble border of wonderful beauty. Two of these panels recall the Palestine mosaics. One is filled by vine branches growing naturally from its four angles, with birds and beasts feeding from grape clusters. The design is less conventional, and the branches are not arranged in any particular form, thus lacking the spirit of design seen in the Jerusalem

example. The other panel is circular, and contains fishes and a man in a boat, recalling in a remarkable manner the portion of the Madeba map mosaic which indicates the Dead Sea. The Melian mosaic has been published from drawings by Mr. Clark, and Mr. Bosanquet in his description writes :—

"It is commonly said that in early Christian centuries the use of mosaic pavements diminished, and mosaic work was almost confined to walls and ceilings. Of late years, however, a surprising number of Christian mosaic pavements have been discovered in Syria and Palestine. Several of them have spreading vine patterns. The best known instance is the pavement of a church

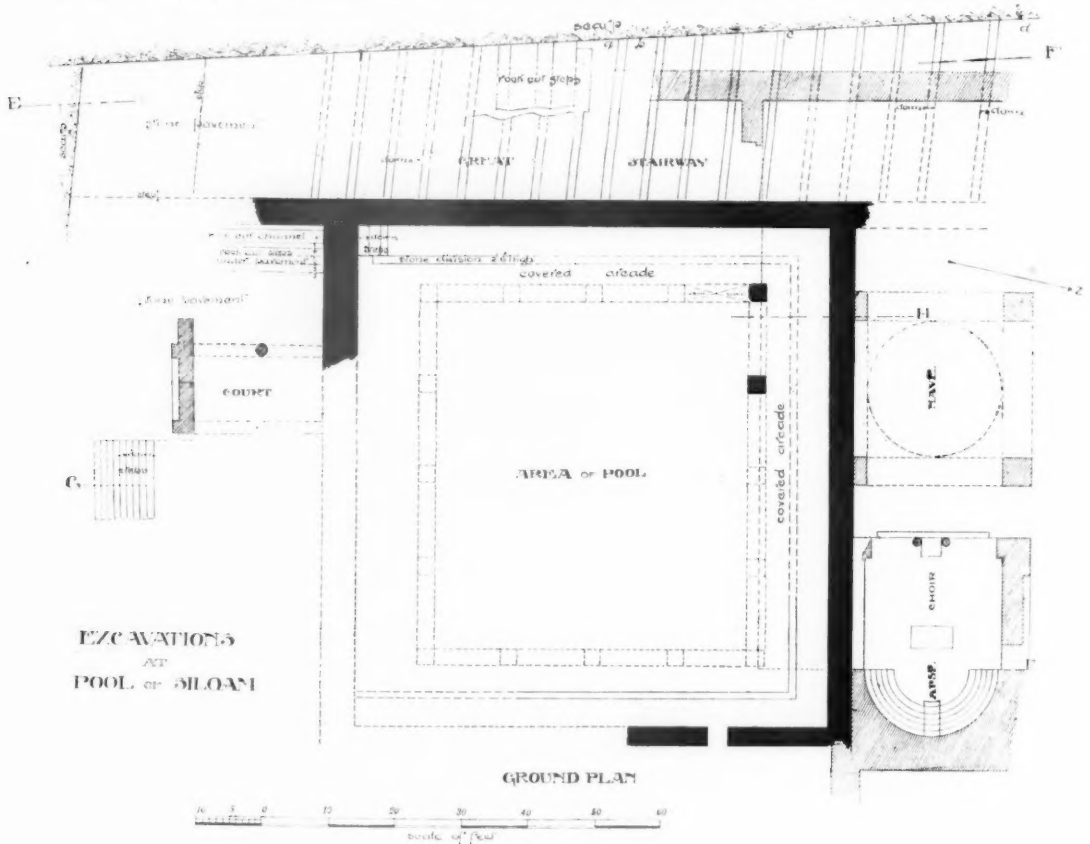


FIG. 8.

discovered by Renan's expedition, at Kabr Hiram, near Tyer, and transported to the Louvre. The general design recalls the 'African Mosaics,' published by Gauckler; four vines spring from vases placed in the corners of an oblong panel; their branches, however, are quite formally arranged, so as to encircle a series of medallions placed in rows of five across the design. An inscription fixes the date of the pavement, according to Renan's interpretation, at 575 A.D., in the reign of Justin II. Dr. Rossi ascribed the vine panel, on the ground of its style, to the fourth century, but later discoveries seem to confirm Renan's conclusion. In particular two mosaics of this type have been found at Jerusalem, one in the Mount of Olives in 1871, and the other outside the Damascus Gate in 1894. Both bear Armenian inscriptions, the former can be dated with comparative certainty to the middle of the sixth century."

Next to the church of the Holy Sepulchre, perhaps the most interesting is the church dedicated to the waters of Siloam in the middle of the fifth century A.D. The discovery of this long lost ruin was made during the recent three years' excavations by the Palestine Exploration Fund under the direction of Dr. Bliss.

First, let me describe the Pool of Siloam, which was built many centuries before, and to which the church owes its existence. It lies outside the southern limit of the present city in the bed of the Tyropœon valley, just a little above its junction with the valley of the Kedron. On the east rises the hill of Ophel, on the northern heights of which is the site of the Temple, and on the west is the western hill, the summit of which is identified by some with Mount Zion. The recent explorations prove that the pool was enclosed within the ancient Jewish wall of Nehemiah, and the wall, where it crosses the valley at its junction with the Kedron valley, shows unmistakable evidence of having been utilised as a dam for a reservoir of considerable capacity, evidently the overflow from the pool. Now it is simply a sewage settling pond, which dries up towards the end of the summer, when the deposit is eagerly carried away to fertilise the stony terraces cultivated about the village. In the winter it is fed by the surface drainage of the surrounding hills and the one huge main drain of the city, keeping in a more or less liquid state until the month of September, when it becomes completely dried up. During the progress of evaporation it is anything but a pleasant or healthy locality to any one except the natives of Siloam, who seem to suffer no inconvenience whatever, and sun themselves about its banks even during its ripest state, and coax it into greater vitality by throwing great stones into it from the wall.

The excavation was commenced just to the north of this pool, and at a point 30 feet below the present surface was found the first of a flight of steps, 24 feet wide, extending northwards for a distance of 110 feet, at which point they ceased, but in all probability they originally continued to join the stepped and paved street of similar character which leads down the Tyropœon valley from the locality of the Temple area. This street lies 20 feet under the surface, formed of well-worked pavement, and on either side are the lower courses of the houses which once existed. Further excavations recovered the whole pool, 70 feet square, with a covered portico, part of which was excavated, and which, according to the pilgrim writers, existed round the four sides. The walls of the pool are partly cut in the rock and partly built, with well dressed and set ashlar, and capped by an inverted ogee moulded course, on which rest the stone covers of the portico, huge stone slabs, some measuring 10 feet square, at a height of 20 feet above the pool pavement, and 5 feet under the present surface of the ground. This wall stands almost complete round three sides, and in some parts looks as fresh as when it was built. Around three sides of the pool is a sort of seat or support, 13 inches thick by 3 feet high, in one stone in the height, and half rounded on the top, polished by long use. The steps and pavement are also polished by foot wear, so much so that some of the early pilgrim writers describe them as polished marble. Note the curious spacing of the treads; they rise 8 inches to 9 inches, and are alternately 1 foot 2 inches and 4 feet 9 inches broad. Underneath these are rude rock steps, evidently the stair to the earliest pool, which, in all probability, was a huge tank rudely cut out of the solid rock. These latter may be the work of Hezekiah, and the restoration may be either that of Herod the Great or Hadrian. The pool is supplied by an aqueduct from the virgins' fountain lying in the valley of the Kedron, to the east of Ophel, probably cut by Hezekiah in the eighth century B.C. The famous inscription discovered in its rock-cut wall, near the outlet, is dated by scholars about that period. It records the history of the aqueduct driven from both ends, and when the miners were yet three cubits apart, they could hear the voices of the other diggers: "for there was an excess in the rock on the right, they struck each to meet the

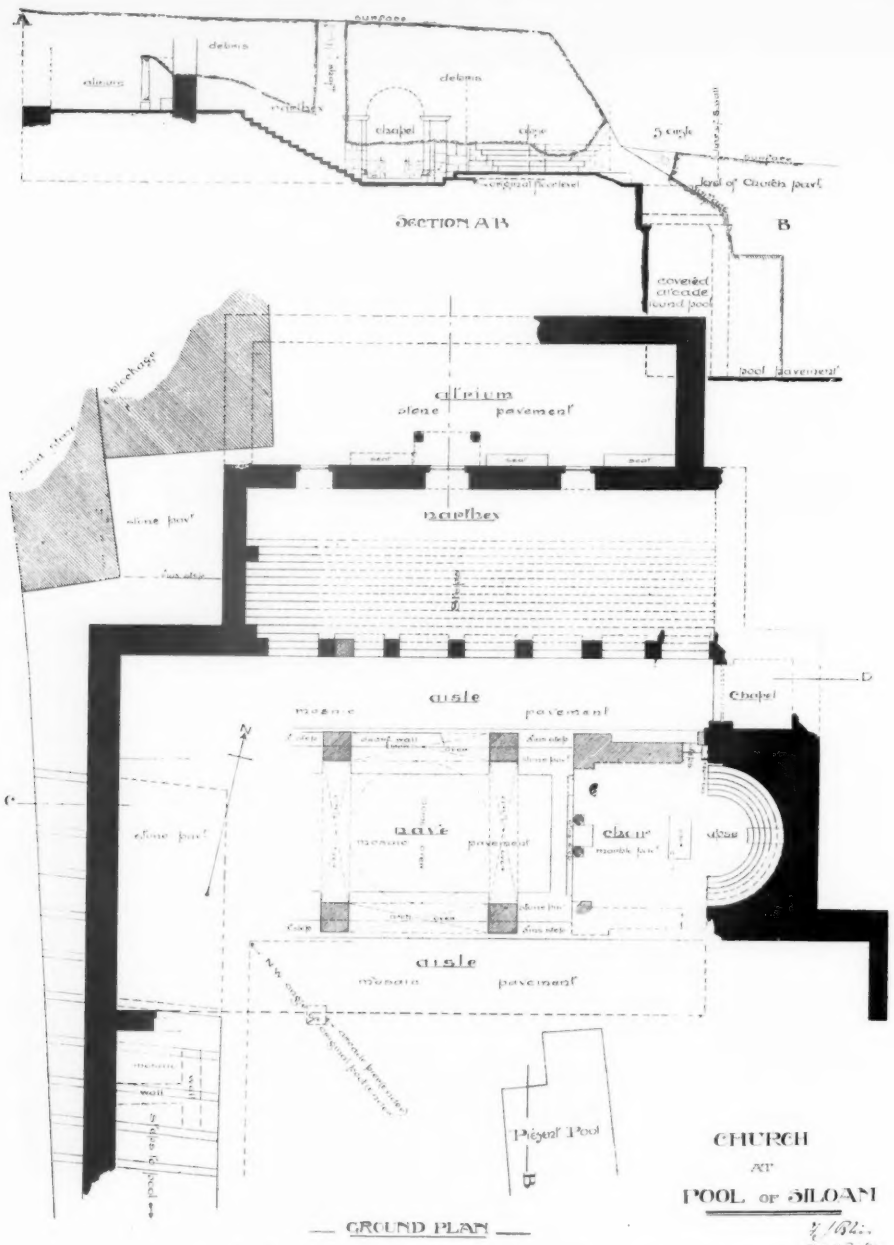

SECTION A B
B
atrium
narthex
aisle
pavement
nave
chancel
Piscina Pool
GROUND PLAN
CHURCH
AT
POOL OF SILOAM
SECTION C D

FIG. 9.

other, pick to pick, and there flowed the waters from their outlet to the pool, a distance of 1,002 cubits. Of a cubit was the height of the rock over the heads of the excavators."

Up till the time of the Empress Eudocia in the middle of the fifth century A.D., there is no record of any building attached to the pool. This unfortunate empress, through some intrigue in the Byzantine Court, was banished by her jealous husband Theodosius, and her pilgrimage in Jerusalem lasted eleven years, during which time she built extensively, her most prominent works being the rebuilding of the city wall on the ancient line. The church of St. Stephen, to the north of the Damascus Gate, was also built by her, and has recently been restored by the Dominicans. The sacredness of the waters of Siloam to the ever-increasing throng of pilgrims who sought relief from their infirmities at its healing stream inspired her with the idea of building a place of worship over these waters. The existence of the Siloam tunnel was then unknown, and the waters were supposed to spring out of a cave which was in reality the outlet of the aqueduct of Hezekiah.

The plan adopted is unique. It consists of a nave and two aisles, measuring over all 86 feet by 52 feet. In the centre of the nave are four piers, 4 feet 3 inches square, the supports of the Byzantine dome of a later restoration. The projecting choir is also of the period of this later work, as well as the thickening of the pier in the entrance colonnade to the north, inserted evidently to provide for the extra thrust of the dome arches. There is no entrance in the west, and access is gained from the north by a great stair of sixteen steps, 68 feet wide, descending through an arcade of seven arches almost the whole length of the aisle. The staircase is reached by three doors, entering from an atrium, the centre doorway being accentuated by the addition of a small portico. Between the doorways occur low stone benches set against the wall, used as seats. It is quite evident that the four central piers and the choir are later additions when the dome was introduced, evidenced by a lower level floor and a low step 2 inches high, which runs down both sides under the choir and piers. These steps do not butt against the west wall, thereby suggesting their continuation across the west end; but on account of complications in the tunnelling which endangered the support of the overhead *débris*, we were unable to verify this. Assuming this theory to be correct, the colonnades would then have been continuous round three sides, similar to the early basilican arrangement. Ranged around the apse are five tiers of steps, with the centre raised at a higher elevation than the flanks for the seat of the bishop, as existing more or less complete at Torcello, illustrated by Fergusson. These steps are so small, however, 10 inches by 10 inches, that they look suspiciously like the retention of an architectural feature whose use had been ignored. There is a small chapel in the east end of the north aisle, screened by a low screen of red marble 2 inches thick, let into the sill and walls, and coped by a moulded coping which stops against moulded stone gate-posts in the centre, the remains of which were found lying at this point. Fragments exactly similar were found in the church at the Pool of Bethesda. The entire absence of any remains of the colonnade of the early basilica may be due to the destroying hands of the Persians 614 A.D., and the later restoration may be after this date; but there are arguments against this theory, notably that founded on the record of Antoninus Martyr, 560 A.D., who writes:—

"Thence we came to an arch where there was an ancient gate of the town. In that place was the dirty water into which the prophet Jeremiah was thrown. Descending from that arch by many steps to the fountain of Siloam, we saw the vaulted basilica, from under which rises Siloam, which has two baths, made by the hands of man out of marble; between bath and bath runs a partition; in the one men, in the other women, bathe for a blessing. Many virtues are found in these waters, and even lepers are cleansed. Before the atrium is a large pool made by the hands of man, in which the (common) people bathe assiduously, for only at certain hours does the fountain pour forth much water,

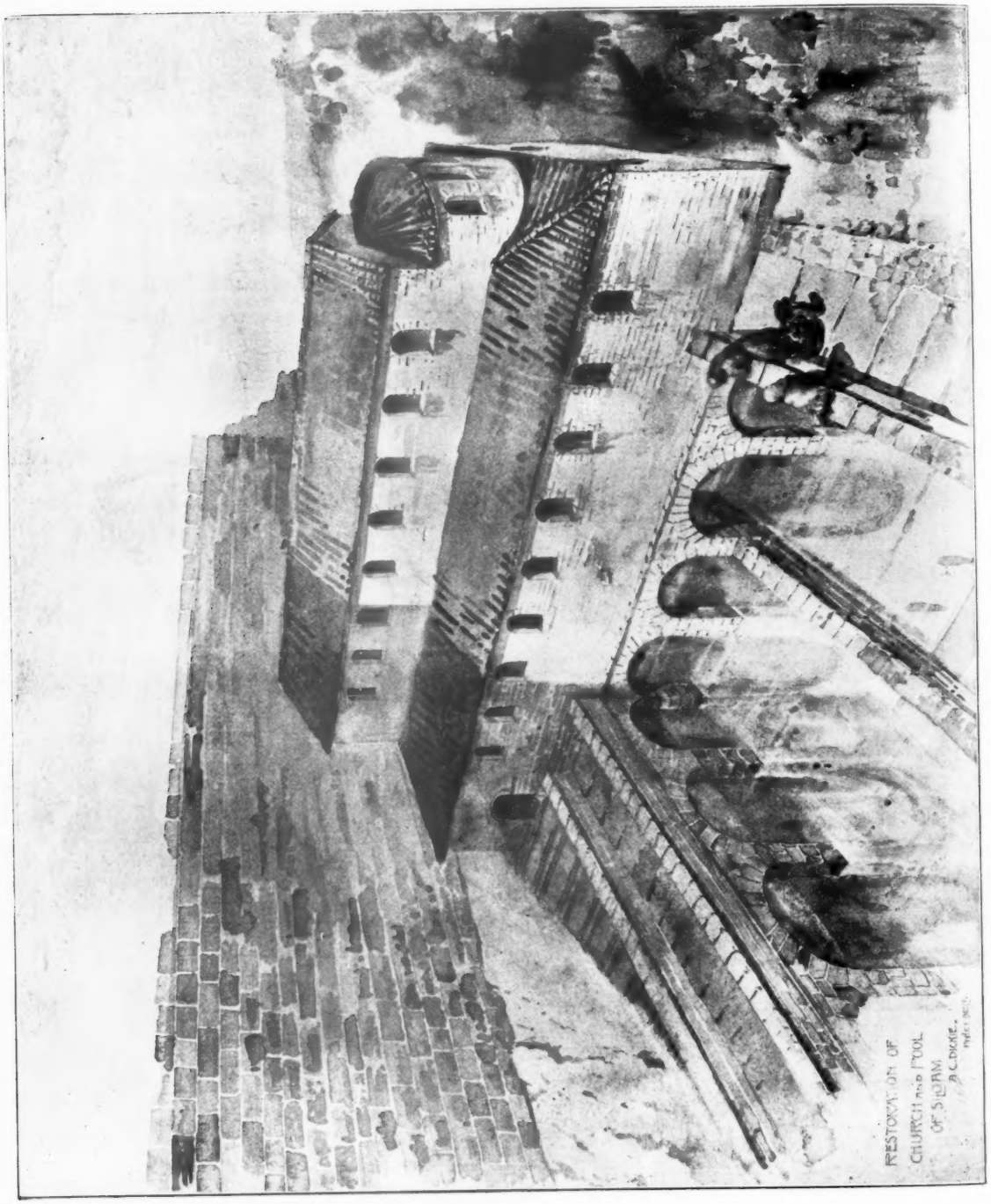


FIG. 10.

which runs down through the valley of Gethsemane, which is also called Josaphat, as far as the Jordan (entering the latter), at the place where it runs into the Dead Sea, below Sodom and Gomorrha."

There is no evidence of *vaulting* in the original building, and on that account it is argued that his description refers to the dome, but as scholars dispute the translation of that particular word, little can be said. The atrium, in front of which the writer says "is a large pool in which the common people bathe," is probably the court to the south of the pool proper, the half of which was discovered as shown on the plan, and the pool of the common people would have been the overflow of the upper pool on the site of the present cesspool.

It will be interesting to consider the influences which worked together to bring about this peculiar plan, and to see with what success the designer has met the difficulties before him. The church, as has already been explained, was built to supply a place of worship for the pilgrims to the holy waters, and was designed to fit into an existing scheme in the building of which no such extension was contemplated. At that time the pool was believed to be supplied by a spring, the builders being ignorant of the existence of the Siloam tunnel. Antoninus Martyr, writing 560 A.D., says, "the church beneath which Siloa rises." The position of the supposed spring to which the church was dedicated, therefore fixed the position of the altar directly over the spot where the waters were believed to spring from, 27 feet below. This practically settled the eastern apse, and the west wall was fixed by the position of the rising scarp and city wall then existing, and forming the western butt of the great staircase, the necessity for incorporating the latter in the plan forcing the builders to draw the wall to

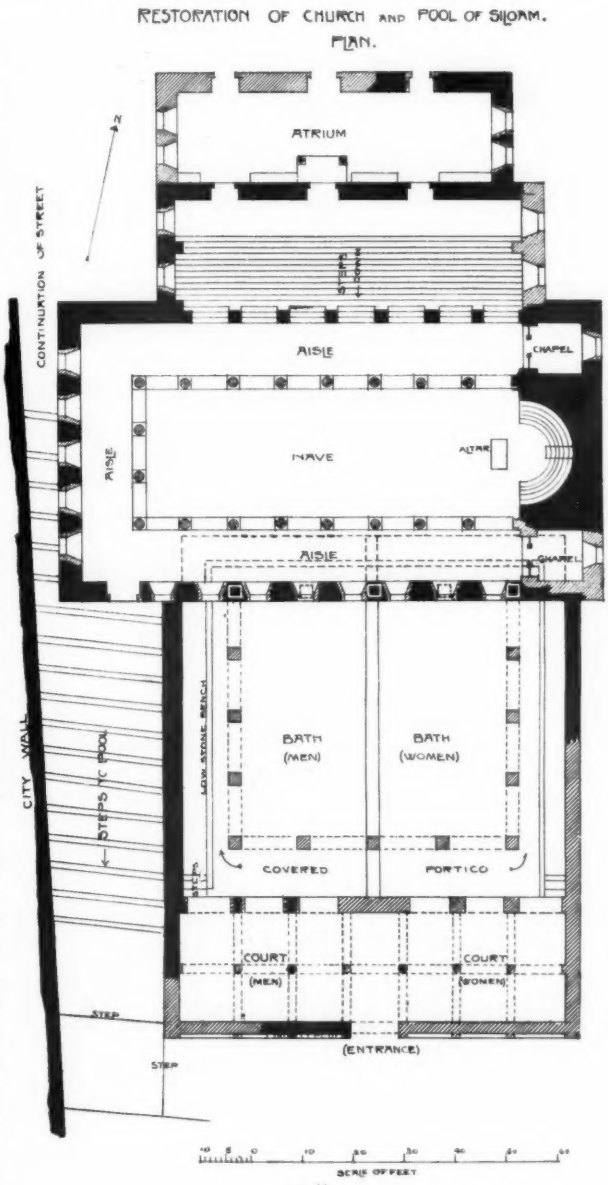


FIG. 11.

within a few feet of the scarp, leaving a space only sufficient for a narrow passage and a western light to the church. It was desirable to have as much of the church as possible over the pool, and this was easily managed by carrying the south wall on the pool arcade and the aisle colonnade on the north wall of the pool. Thus the north was the only side available for the entrance to the church, and although the rapidly rising ground rendered this difficult, necessity demanded it, and the magnificent idea of a great staircase entering the north aisle through seven arches (almost its whole length) was the result. The traditional three doors were placed at the entrance to the staircase, and an atrium put in front, which in all likelihood was supplied by smaller doors, although we found no traces of them. Thus all the traditions of the early church plan were retained in a modified form—a most successful solution of an exceedingly difficult problem.

It is wonderful that so much of the walls are still standing. Although for the most part they were only seen to the height of the tunnels which were driven along their sides, at the points where shafts were sunk the masonry was found to a height of 8 to 9 feet, and it is possible that it exists even higher. We saw the westernmost pier of the entrance arcade up to the cap and springer, and the design of the arch mould can be got from the numerous voussoirs lying in the line of the arcade. One of the shafts of the central doorway of the staircase stands complete to the cap necking. The one capital discovered is a very rude imitation of a Corinthian cap. All the mouldings of the church are of a debased character, shallow imitations of classic forms, as rude in execution as they are weak in design. I shall quote from Mr. Crace's note in the *Quarterly Statement* with regard to these details :—

"In these Siloam mouldings we recognise a certain attempt at repeating the time-honoured forms, but in a clumsy, cheap manner, with no regard for proportion or effect of light. The form of cross, too, cut in low relief in a stone slab, as well as the detached cross, are of a form characteristic of the same epoch. The poor, tamely-cut capital would seem to belong to the same period, and all justify the attribution of the work to Eudocia, who died A.D. 460."

It must be remembered that the fragments of details were only those which came in the way of the comparatively small area of the tunnels, for although in the whole excavation of the church and pool the distance traversed by the tunnels amounted to about 300 yards, the excavated area was a very small proportion of the whole. The difficulties of recovering such a plan were great in comparison with what would have been had it been possible to clear out the whole site. As it is the tunnels are now entirely filled up, and the ground shows no signs of what lies beneath its surface. An unsuccessful attempt was made to buy the site, with the intention of restoring the church and pool to their original state. At the time I gave the matter some thought, and I now show a sketch restoration [pp. 254, 255, 256] founded upon the theories which have been explained. When the existing remains have been fully studied it is wonderful how little remains to conjecture, as the buildings practically stand for a height of 35 feet from the pool pavement to the ruined top of the church walls.

One of the latest notices of the church is that by Felix Fabri, 1480–1483, at which time the church was in ruins. He writes : "When we came out of the Bathing Pool we followed the channel of the stream and came to the fountain of Siloam, where it runs out from Mount Zion. Now as we came up thither, walking up stream along the side of the brook, we wondered at the foul and loathsome colour of the water, but when we came to the fountain we discovered the cause of the dirty colour, for a Saracen, who was a tanner, stood at the mouth of the cleft from whence the water gushes forth, and was soaking, pounding with his feet, hides and skins lately stripped from the beasts." And further on : "And devout men built a sort of monastery about the fountain, as may be seen at this day, for in front of the fountain there is a pool like a bath, and it is set about with walls and vaults like the passages round a cloister, and the arches of

the roofs rest upon marble columns. The building is partly in ruins, and the remains threaten to fall into ruins also. It would be an easy task to restore the ruins of the holy fountain, but no one touches them or puts forth his hand to them, and so the place grows day by day more ruinous, even as do the buildings in other holy places."

Since then no man has "put forth his hand to them," and they are now hidden deep beneath the fall of centuries. But they are yet there, perhaps not greatly changed, and could the site be cleared its appearance may be much as Felix Fabri saw it; aye, even to the tanner in the pool, as a tannery still stands on the hill, and during the few months of "high tide" the "Saracen" pounds his skins in the now fetid waters of Siloam, for Jerusalem is a waterless city, and he has but little choice.

NOTES ON MR. DICKIE'S PAPER.

On the motion of the Hon. Secretary, seconded by Mr. R. Phenè Spiers [*F.*], a vote of thanks to Mr. Dickie for his Paper and illustrations was carried by acclamation.

Owing to a business discussion not contemplated when Mr. Dickie's Paper was arranged for, the Paper was not reached until a late hour, and when read there was no time for discussion. The President therefore invited members and visitors to put in writing any observations they would make upon the subject, and send them to the Secretary for insertion in the JOURNAL. The following have so far been received:—

From Mr. R. PHENÈ SPIERS [*F.*], F.S.A.

As the reading of Mr. Dickie's paper was not terminated till twenty minutes past ten, I felt it would be too late to commence a discussion, especially as some of the remarks which the paper has suggested to me are of a somewhat debatable character, and I propose now to defer for a second communication a portion of my statments, in order that there may be time to reproduce one or two additional illustrations. In Mr. Dickie's restoration of the Church at the Pool of Siloam, he shows on the north side a small chamber which he calls a chapel. As in the Greek Church there is only one chapel and one altar, the chamber in question was probably a recess set apart for the reception of the offerings of the faithful. In all the early Syrian churches, on either side of the choir are small chambers, generally with apsidal terminations. The one which is nearest to the main approach (sometimes on the north and sometimes on the south side) is the room for the offerings, which is screened off from the church only by a low enclosure screen similar to that shown on Mr. Dickie's plan. The other chamber on the south side contained the table on which the sacred elements were placed, and was entered by the priest only. These chambers do not serve the purpose of the prothesis and diaconicon, which for the purposes of the improved Greek ritual were introduced into all the Greek churches in the time of Justin II.

Mr. Dickie informs us that the small triapsal church was now surmounted by a modern church, to which he gave no name. If this triapsal church lies under a portion of the Church of St. Mary the Great, just restored for the German Emperor, may it not have been the Church of St. Mary the Less, which was built by the Monks of Amalfi about 1040? It does not seem to have been of sufficient importance to be the Church of St. John, which was built on the west side, I think, of the Church of St. Mary the Great.

As all the churches in Jerusalem were razed to the ground in 1010 by the Mad Khalif, El-Hakim, and thirty years afterwards two churches were built on this site, it may fairly be supposed that the one illustrated in Mr. Dickie's drawings is one of those, and is valuable therefore as showing the style of building erected in Jerusalem before the occupation of that city by the Crusaders. If so, it shows that the arches employed were all semicircular and not pointed. Further, in the Church of the Holy Sepulchre, the rotunda, built by Monomachus, was shown by Willis to have had semicircular arches throughout in its design. A drawing of this rotunda is given in his work, taken from the drawings of Bernardino. It follows, therefore, that the pointed arch was not necessarily current in Syrian work prior to the Crusaders. In my next communication I shall endeavour to prove the error of that long-cherished belief that pointed architecture was brought from the East by the Crusaders. It was introduced from Europe into Syria, and Mr. Dickie's remark "that the strong Provençal smack" about the Church of the Holy Sepulchre "betrays the inspiration of its design" is quite in accord with my recollection of the

church and of its ornamental and constructive details.

From Mr. J. D. Crace [*H.A.*]

It is greatly to be regretted that the reading of Mr. Dickie's paper was delayed to so late an hour that discussion was not possible. Some service the paper will have done to both the Institute and the Palestine Exploration Fund. To the first in bringing home to architects the fact that there are innumerable remains of Christian buildings of periods both before and after the Mohammedan conquest; and to the second in showing architects with what care the Fund is endeavouring to record all that is discoverable. Architects as a rule have not, neither have the public generally, an idea of the vast number of remains of the churches and castles of the Crusading occupation, and these, no less than the earlier buildings, afford many interesting links in the history of architecture. In fact, Palestine should be an excellent "playground" for architects now that it is so easily accessible.

With regard to the mosaic floors of which Mr. Dickie gave some illustrations, it is worth while to note that the pavement of the mortuary chapel with the vine scroll, in which each volute contains some different bird, considerably resembles the mosaic decoration of a small dome in the Church of S. Vitale at Ravenna, a work believed to be of the sixth century; whilst there is also a decoration of somewhat similar treatment in the roof of the well-known "Baptistery of S. Costanza," close to Rome, a work supposed to be of the first half of the fourth century.

I agree with Mr. Dickie in thinking the other design, which is divided into rather compact panels by bands of Guilloche ornament (from the Mount of Olives), to be the earlier pavement. It is at least more purely Roman: perhaps second or third century.

A point of a very different kind may be noticed in connection with the discovery of the "Siloam" church. It was pointed out that the church cut into the remarkable flight of steps, which may be of the time of Hezekiah, and which, from its width, as well as from its long and short treads, was doubtless intended for use by animals as well as by men. It will be noticed that these steps are, in plan, each inclined towards the scarp or wall. This appears to be a simple and excellent device for causing the descending passenger to tend always to the safe side of the scarp, and away from the outer precipitous drop.

I feel sure that members of the Institute will appreciate the zealous energy of Mr. Dickie and his co-explorer and chief, Dr. Bliss, if they reflect that, in the case of this church and pool of Siloam, as in numerous other instances, the whole plan and other particulars have had to be groped for by working like moles in narrow tunnels far below the surface, and driving through the mixed and often treacherous *débris* of the ruined structures themselves and of other superincumbent buildings—a very different sort of labour from that of measuring and planning remains which are visible from the surface. It is, however, by such methods alone that discovery of any importance can be made about a city which has passed through such terrible vicissitudes as Jerusalem.

Durham Cathedral, South Transept and Nave. (From a photograph by Mr. C. C. Hodges.)

THE BEGINNINGS OF GOTHIC ARCHITECTURE.

By John Bilson [*F.*], F.S.A.

I. REVIEW OF RECENT DISCUSSION.

So much has been written on the question of the origin of Gothic architecture that any further discussion of the subject may well appear to many to be superfluous. The general lines of development by which the flat-ceiled basilica of Western Europe was transformed into the stone-vaulted Gothic church have been traced accurately enough, but there is still considerable difference of opinion as to the part which was played by individual districts in the earlier stages of this development. The recent investigations of French archæologists are certainly worthy of the serious attention of English students, who are still too much inclined to accept as final the judgments of earlier writers, such as Viollet-le-Duc, some of which have been found in the light of more recent inquiry to be untenable. The discussion of this question during the last few years is of special interest to us, for it has reached a stage where accurate knowledge of Norman * examples in England may, I venture to think, contribute materially to a correct conclusion on at least one aspect of the questions involved in the inquiry.

In 1885 M. Eugène Lefèvre-Pontalis presented to the *Ecole des Chartes* an essay on the rural churches of the diocese of Soissons. In *L'Art gothique* M. Louis Gonse adopted for the most part the views propounded in this essay. M. Lefèvre-Pontalis has since developed his essay into his fine work, *L'Architecture religieuse dans l'ancien diocèse de Soissons au XI^e^ et*

* Objection has been taken to the use of the term "Norman" in this connection, but I shall use it as a convenient and generally accepted term (without attempting to defend its propriety), especially as the course of development which is the particular subject of the second part of this paper seems to be Norman rather than English. A similar excuse must serve for the use of the term "Transition," though the history of mediæval architecture is, of course, that of one long transition.

au XII^e siècle. The scientific analysis and complete illustrations of the churches of this important district which are embodied in his work are of extreme value to the student of early French Gothic architecture. The publication of the first part of this work was followed by a paper, entitled *La Transition*, by M. Anthyme Saint-Paul, in which that distinguished archæologist summarises what he had previously written in numerous scattered articles, and presents his reasons for differing from some of M. Lefèvre-Pontalis' conclusions. M. C. Enlart's work on the churches of Picardy excellently describes and illustrates the Romanesque and Transition monuments of the dioceses of Amiens and Boulogne, and contains his views on some of the questions under controversy. The whole discussion has been reviewed in a masterly paper by Herr Dehio, one of the authors of a work which has been justly described in this Journal as the best book on the general subject of mediæval architecture which has yet appeared. Herr Dehio's paper is well worth a full translation; but, in the absence of this, I have made free use of it here, for I venture to think that his general conclusions must in the main eventually win acceptance, even among the younger French school of inquirers. The second, third, and fourth parts of M. Lefèvre-Pontalis' work have been published since the appearance of the criticisms mentioned above.*

The definition of the essential elements in the transition from Romanesque to Gothic is common ground to all our inquirers. The pointed arch, to the introduction of which an exaggerated importance was formerly attributed, is now seen to be only one of the factors in the transformation, and not indeed the most important factor. The history of the transition is now recognised as the history of the successful attempt to cover with stone vaults the three-aisled church of the basilican type of plan. There is no longer any difference of opinion as to the elements which play the most important part in the transition. They are the ribbed vault, the pointed arch, and the flying buttress, and of the three the ribbed vault assumes the first place, both in point of time and importance.† In the present state of knowledge, there can be no doubt that, when once the importance of these three elements was realised, the school of the Ile-de-France fully deserves the credit of their rapid and marvellous development, and that it led the way to the glorious achievements of the complete Gothic idea. But the younger school of French archæologists, as represented by M. Lefèvre-Pontalis, is by no means satisfied with this. The exclusive credit of the discovery of the ribbed vault is claimed for the Ile-de-France.

* The following are the principal works referred to, and where the author's name only is cited below the reference is to these works:—

L'Architecture religieuse dans l'ancien diocèse de Soissons au XI^e et au XII^e siècle, by Eugène Lefèvre-Pontalis, Paris, E. Plon, Nourrit et Cie; part i, 1894; part ii, 1896; part iii, 1897; part iv, 1897.

L'Art gothique, by Louis Gonse, Paris, Ancienne Maison Quantin.

La Transition, by Anthyme Saint-Paul, in the *Revue de l'Art chrétien*, Paris, 1894–5.

Monuments religieux de l'architecture romane et de transition dans la région picarde, by C. Enlart, published by the *Société des Antiquaires de Picardie*, Amiens and Paris, 1895.

Die Anfänge des gothischen Baustils; zur Kritik des gegenwärtigen Standes der Frage, by G. Dehio, in the *Repertorium für Kunstwissenschaft*, xix. Band, 3. Heft. Berlin and Stuttgart, W. Spemann, 1896.

I am indebted to Professor Baldwin Brown and other friends for assistance in translating Herr Dehio's paper. The references below to M. Anthyme Saint-Paul's and Herr Dehio's papers are to the pages of the reprints. Much of the substance of Herr Dehio's paper has since been embodied in *Die Kirchliche Baukunst des Abendlandes*, by G. Dehio and G. von Bezold, vol. ii., first part of chapter ii.

† E. Lefèvre-Pontalis, i. 57—"La croisée d'ogives est l'élément essentiel du style gothique. L'emploi systématique des arcs en tiers-point et des arcs-boutants ne fut que la conséquence de l'usage des voûtes de ce genre. En trouvant le moyen de reporter la poussée des voûtes sur quatre points donnés, l'architecte qui adopta le premier les nervures diagonales avait découvert en même temps le principe qui permit d'élever plus tard de vastes églises, à l'aide d'un système ingénieux d'arcs-boutants. Tout l'art gothique dérive de la croisée d'ogives comme un grain de blé qui contient en germe une riche moisson." So also Anthyme Saint-Paul, in *La Transition*, p. 6—"L'architecture gothique ou ogivale est la conséquence de la fusion, dans une même voûte, de la croisée d'ogives et de l'arc brisé, contre-boutés, quand il y a lieu, par l'arc-boutant." And G. Dehio, p. 3—"Wenn man auch von dem vollendeten System ganz richtig sagt, es werde constituirt durch die Trias: Kreuzrippen, Spitzbogen, Strebebogen, so sind diese Elemente unter sich doch nicht ganz gleichwerthig; das an erster Stelle genannte ist das erste und herrschende auch dem Range nach. Die frühesten Keime der gothischen Idee liegen beschlossen in der Geschichte des Kreuzrippengewölbes."

According to Quicherat and Viollet-le-Duc, the single elements of Gothic appeared separately in the different provinces, and were united and developed by the school of Paris. The theory of the initiative of the Parisian school has, however, been entirely disproved by later investigation. It has been clearly shown that, in the early years of the twelfth century, Paris was considerably behind the neighbouring provinces. At this time the church of the rich abbey of Saint-Germain des Prés was partly rebuilt, but its nave, which belongs to this period, was still flat-ceiled. The chapel of Saint-Aignan (in *la Cité*, to the north of the cathedral), which was built about 1120, has still only the unribbed vault.* The only ribbed vaults in Paris which are earlier than Saint-Denis are to be found in the ambulatory of Saint-Martin des Champs, but this work is connected with the school of Picardy rather than with other Parisian buildings.† According to the prevailing view, the school of the Ile-de-France takes the place which was formerly assigned to the school of Paris.

The first part of M. Lefèvre-Pontalis' work consists of an historical and archæological study, in two chapters (vi. and vii.) of which, going beyond the limits of his immediate subject, he discusses the general questions of the origins of Gothic. His conclusion is thus summed up in his own words:—"La nervure est une découverte essentiellement française. C'est sur le sol de l'Ile-de-France qu'elle fut soumise à des expériences décisives, avant de s'imposer aux écoles des autres provinces et à celles des pays étrangers."‡ He considers Senlis to be approximately the geographical centre of the district in which the ribbed vault became the fundamental principle of Gothic art, and that it was in the valleys of the Seine, Oise, Aisne, Marne, and their affluents that this original art attained such a high degree of perfection. In this district he finds the embryons of the system inaugurated at Saint-Denis, which Viollet-le-Duc failed to recognise in this connection.§ The beginning of the movement is placed in the first years of the twelfth century. Everything analogous to it which is found in other provinces is explained as a borrowing from the Ile-de-France.

It is at this last point that Herr Dehio considers the error of the prevailing teaching to begin. He points out that the earliest known examples of the rib are spread over a wide extent of country: Quimperlé in Brittany, Poitiers, Saint-Gaudens, Saintes, Moissac, Saint-Guilhem-du-Désert, Saint-Gilles, and Saint-Victor, Marseilles, none of which are later than the first or second decades of the twelfth century, and some may possibly be of the end of the eleventh century. He considers that the chief obstacle to the theory of this "découverte essentiellement française" is the vaulted architecture of Lombardy. This architecture is not, as Dartein and others have made it, Carolingian, nor is Ruprich-Robert right in supposing that it exercised such strong influence on that of Normandy; but, on the other hand, he considers that M. Lefèvre-Pontalis errs quite as widely when he asserts "que l'emploi systématique de la nervure en Lombardie ne remonte pas au delà du second quart du XII^{e} siècle," and "Il suffit de comparer l'ornementation des églises lombardes voûtées sur croisées d'ogives avec celle des monuments religieux bâtis dans l'Ile-de-France au XII^{e} siècle, pour constater entre leurs motifs de sculpture une ressemblance vraiment frappante."‖ The French origin of the Lombard vault system is not here expressed in so many words, but that it is taken for granted by M. Lefèvre-Pontalis is proved by his conclusion quoted above. This, says Herr Dehio, is indeed so bold—employing the most polite term—that any effort to prove the contrary is superfluous. As a fact, the beginning of the twelfth century is the latest limit which can be fixed for the establishment of the Lombard system, and we then find the ribbed vault employed more

* E. Lefèvre-Pontalis, i. 84. A. Saint-Paul, p. 9. The fact that the choir aisles of St. Bartholomew's, Smithfield, which was founded in 1123, are covered with unribbed vaults seems to indicate that London, like Paris, lagged behind in the adoption of the ribbed vault, for (as we shall see presently) the rib had been used in England thirty years previously.

† A. Saint-Paul, p. 11. ‡ E. Lefèvre-Pontalis, i. 96.

§ *Dictionnaire raisonné de l'architecture française*, ix. 503. ‖ E. Lefèvre-Pontalis, i. 59, 60.

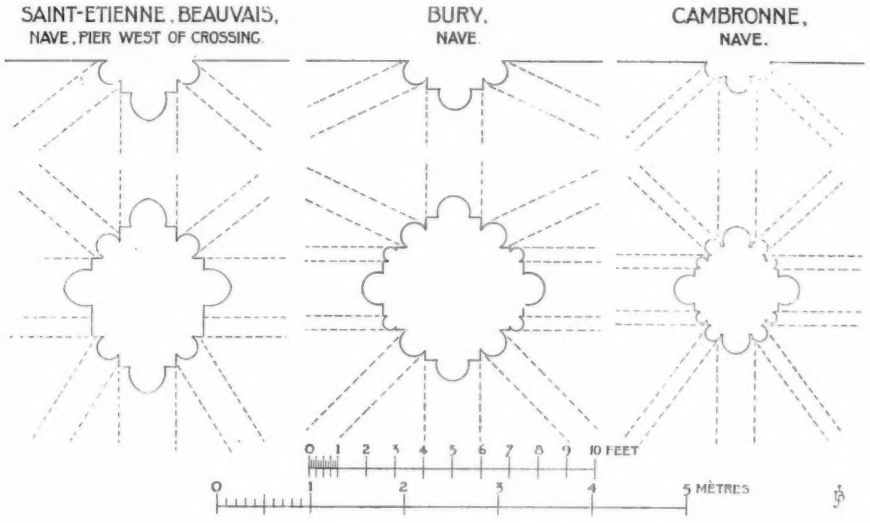
sagaciously and in greater dimensions than in any contemporary work in Gaul, while buttressing walls, similar in intention to the later French flying buttresses, are component parts of the structure. The Lombards were then just on the threshold of Gothic, though this threshold they did not actually cross. He thinks that there is nothing derogatory to the fame of the French in recognising that other sections of the Gallic people and other races had started before them toward the same goal, though this goal they did not actually reach.*

M. Lefèvre-Pontalis traces the development of the ribbed vault in the Ile-de-France, from its first appearance in rudimentary examples which he attributes to the end of the eleventh century, to the south transept of Soissons, completed probably about 1185. For our present purpose, however, we are concerned only with those buildings which he considers to be earlier than Saint-Denis, the narthex of which was completed in 1140, and the choir in 1144. The few great churches built during this period have entirely disappeared. On the other hand, many smaller churches remain, which for the most part have only been recognised in this connection in recent times, and many of these present examples of the ribbed vault, the more or less primitive treatment of which shows that they are original.† Their precise dates are, however, generally a matter of conjecture. The eastern bay of the south aisle of Rhuis (Oise) has a ribbed vault, the rib section showing three rolls separated by fillets.‡ The tower of Auviller, near Clermont in the Beauvaisis, has a vault with chamfered diagonal ribs springing from corbels. M. Lefèvre-Pontalis describes these two small vaults as the first attempts in this part of France to transform the groined vault by reinforcing it with ribs, and from the character of their detail he assigns both to the end of the eleventh century. Herr Dehio's comment on these and other examples which M. Lefèvre-Pontalis dates in similar fashion is that this way of deciding age is very unsafe, especially for country churches, where the builders employed were more likely to be behind the times than advanced. He thinks that examples of this kind are not fitted to be foundation-stones for far-reaching deductions; but that, even if the conjecture is correct, nothing is gained by it for M. Lefèvre-Pontalis' theory, but only another proof is afforded that, before the beginning of the twelfth century, the rib was the common property of all districts which were occupied with the problem of vaulted construction. In these vaults the rib is merely a method of strengthening the groin; the plan and system remain otherwise unchanged. It is not so in the next example to be considered.

The ambulatory of the conventual church of Morienval (Oise) is considered by M. Lefèvre-Pontalis to be the starting-point of the systematic development of the ribbed vault. This ambulatory consists of a very narrow passage around a semicircular apse, vaulted in four bays, the two central bays being a little wider than the side bays. The piers which support the wall of the apse consist of three attached shafts, with a pilaster next the choir; they are of very light construction, and only one (the southernmost) remains unaltered. Three of the arches of the main arcade which are supported by these piers are pointed, and one is semicircular. The window arches have two orders moulded with large rolls, those of the two central bays being elliptical and those of the two (narrower) side bays semicircular. The little transverse arches are semicircular, very much stilted, and of chamfered section; their clear opening is only 1 foot 10½ inches. The diagonal ribs are moulded with a large roll, and are received by shafts, except on the apse piers, where they abut very awkwardly against the back of the arches.§ With regard to the date of this ambulatory, no documentary evidence whatever is available. There is a record of the translation of relics in 1122, but there is no necessary connection between this translation and the erection of the

* G. Dehio, pp. 4, 5.
† G. Dehio, p. 5.
‡ E. Lefèvre-Pontalis, i. 72, 220, and pl. xii.
§ For plan of the ambulatory and other illustrations of Morienval, see E. Lefèvre-Pontalis, i. plates v.–ix.; also L. Gonse, pp. 55–57; and C. H. Moore, *Development and Character of Gothic Architecture*, pp. 34, 35.

ambulatory. The date of the work has been the subject of lively controversy. M. Lefèvre-Pontalis, and following him M. Gonse, formerly assigned it to the last years of the eleventh century. In a paper written in 1893, M. Anthyme Saint-Paul pronounced in favour of a date not much earlier than 1120 nor much later than 1135;* in his later work (*La Transition*, p. 26) he would place it willingly at 1120, with some reluctance at 1115. M. Enlart, without ceasing to believe 1100 to be a likely date, is inclined to accept 1122 as equally probable.† In the first part of his work, M. Lefèvre-Pontalis brought the date down to 1110; in the second part, he reviews the whole discussion, and gives his reasons for assigning the ambulatory to a date between 1110 and 1120;‡ but it is worthy of notice that, with the solitary exception of Bellefontaine, the dates of the examples which he cites in support of his opinion are not supported by any *certain* evidence. Herr Dehio's view is that Morienval is badly qualified as the foundation of a new architectural system, and



the controversy is certainly a significant commentary on his remark, quoted above, as to the danger of dating these early efforts without other evidence than is afforded by the character of their details. Truly, as M. Régnier says, "c'est à Morienval, plus que partout ailleurs peut-être, qu'il faut se mettre en garde contre les entraînements de l'imagination."§

The great abbey-church of Saint-Lucien, Beauvais, which was commenced about 1090 and finished in 1109, was unfortunately destroyed at the Revolution, and nothing definite is known about its vaults. This church, however, is regarded as the prototype of Saint-Etienne, Beauvais, which is attributed by M. Lefèvre-Pontalis to about 1120, and by M. Anthyme Saint-Paul to about 1115–1125. The vaults of the eastern bays of the nave aisles belong to the first building period. Each rib is supported by its own shaft (see plan).‖

* *Poissy et Morienval*, by Anthyme Saint-Paul, in the *Mémoires de la Société historique et archéologique de Pontoise et du Vexin*, xvi. 7.

† C. Enlart, Introduction, p. iv.

‡ E. Lefèvre-Pontalis, i. 74, 206. He remarks that the architects of the Valois did not work mouldings on their arcade arches before the twelfth century (p. 204). Such mouldings do, however, frequently occur in Norman work before the end of the eleventh.

§ *Les origines de l'architecture gothique*, by Louis Régnier, in the *Mémoires de la Société historique et archéologique de Pontoise et du Vexin*, xvi. 127.

‖ See view in L. Gonse, p. 59. Also *Archéologie des monuments religieux de l'ancien Beauvaisis pendant la métamorphose romane*, by E. J. Woillez, Paris, 1839; pl. vi. and vii.

The arcade arches and transverse arches are stilted semicircles, and the diagonal ribs appear to be nearly semicircular (possibly slightly elliptical). The transverse arches are chamfered in section, as also are the diagonal ribs in the easternmost bay; westward of this they are moulded with a large roll. The surfaces of the vault slope upwards at the crown towards the key of the diagonal ribs. There are no wall-ribs. The vault of the nave itself is attributed to the second half of the twelfth century; there are no flying buttresses or abutting arches, but only flat pilaster buttresses at the back of the triforium wall. M. Lefèvre-Pontalis remarks that the aisle vaults are much less crude in appearance than those of the ambulatory of Morienval, but this is true only of their technique, and not of their system, which is certainly less developed than that of Morienval. Herr Dehio points out the inconsistency of attributing the more advanced construction to an earlier date than the less developed, and, though not of course impossible, he thinks it very unlikely that Saint-Etienne, in a cathedral city, would be behind an out-of-the-way nunnery church like Morienval. He cannot but regard as demolished the efforts, received with so much applause, to put back the beginning of the Gothic movement to the beginning of the century. In itself it does not matter very much, he says, whether the transition lasted twenty, thirty, or more years; but it becomes of importance when it is necessary to decide the relation of the Ile-de-France to the neighbouring provinces.

M. Lefèvre-Pontalis shows that the new system of construction was matured in the smaller churches of the Beauvaisis and Soissonnais dating between Saint-Etienne, Beauvais, and Saint-Denis, and he supports this view by a large number of examples, which explain the rapidity with which a definite solution was arrived at. In the rural churches of the Soissonnais, as a rule, only the choirs and transepts are vaulted, the naves being still wood-ceiled. In the Beauvaisis, however, there are several early examples of vaulted naves and aisles. Plans of the piers of two of these are shown above. The nave of Cambronne-lès-Clermont is styled a simple imitation of Saint-Etienne, Beauvais, and assigned to 1125 at latest.* Bury is attributed by M. Gonse to about the same date.† In both these examples the arcade arches and transverse arches are pointed, and the vaults are without wall-ribs. With one exception, however, the dates assigned to these small churches are not supported by any positive authority. That exception, the chapel of Bellefontaine (Oise), is worthy of particular attention, not only in the matter of style, but as an authentically dated building, even if the date is not so absolutely certain as M. Lefèvre-Pontalis and M. Gonse declare. In 1125, Lisiard, bishop of Soissons, granted a charter to the abbey of Saint-Barthelemy, Noyon, authorising them to build a church here. On the strength of this charter, M. Lefèvre-Pontalis places the erection of the building between 1125 and 1130. M. Anthyme Saint-Paul and Herr Dehio point out that the document in question is a licence to build, and not necessarily the exact date of the actual construction; M. Enlart, indeed, attributes the work to about 1145, and is inclined to believe it to be later rather than earlier than this date.‡ The plan of this little church, which is partly ruined, shows a nave of one square bay, flanked by north and south aisles of two bays each, and a chancel of one square bay, flanked by aisles or chapels (of one bay each) which stop short of the east end of the chancel itself. The aisles of the nave are covered with ribbed vaults, the arcade arches and transverse arches being pointed and considerably stilted; the chancel is also covered with a ribbed vault, in which the key of the diagonal ribs is placed at a higher level than the apex of the chancel arch; none of these vaults have wall-ribs. The chancel aisles or chapels are covered with

* E. Lefèvre-Pontalis, i. 77. Cambronne is illustrated in Woillez (*op. cit.*), pl. iii. and iv.; and in R. J. Johnson's *Early French Architecture*, pl. 32 and 33.

† L. Gonse, p. 64, and illustrations on pp. 63 and 65.

‡ E. Lefèvre-Pontalis, i. 78; ii. 4; pl. xviii. and xix. A. Saint-Paul, p. 21. C. Enlart, Introduction, ii. note 2.

unribbed vaults, which are contemporary with the rest of the work.* All the windows have semicircular arches. M. Lefèvre-Pontalis' work contains descriptions and illustrations of many small churches of somewhat later date which present similar characteristics. To this group of churches of the Beauvaisis and Soissonnais he attributes exclusively the development which led up to Suger's great work at Saint-Denis.†

The ribbed vaults in these early examples are invariably quadripartite. Nowhere is there any approach to the sexpartite system.‡ In his previous work § Herr Dehio grouped together a series of early Gothic churches, headed by Noyon which was commenced about 1152, which he designated as of the school of Saint-Denis, chiefly on the strength of a comparison of the plans of their choirs. The naves of these churches are characterised by triforium galleries and sexpartite vaults, and Herr Dehio suggests that they may also have derived these characteristics from Saint-Denis. However this may be, it is remarkable that, while we look in vain for any suggestion of these features in the churches of the Ile-de-France which M. Lefèvre-Pontalis describes as the first steps leading to Saint-Denis, we do find them as characteristic factors in the vaulted architecture of Normandy. M. Lefèvre-Pontalis, indeed, says that the ribbed vault was "une véritable importation dans l'architecture normande," ‖ but this is pure assertion. Herr Dehio remarks that, although it is true that in many of the Norman churches the vaults have been added afterwards, there is no valid reason why they must have been added only after the middle of the twelfth century; besides which there are churches with original, though unfortunately not exactly dated, vaults. On such uncertain ground, he considers that the sexpartite method of vaulting (which M. Lefèvre-Pontalis passes over in silence) affords the surest indication of the real relation of the two schools. He points out that we find in Normandy, in addition to the usual form of the sexpartite vault,¶ a similar but much less developed form, which is not really a sexpartite vault at all, but a quadripartite vault over a double bay divided by an intermediate transverse rib carrying a wall.** It is obvious that this method could not have been invented if the simple quadripartite vault had not already been known. For the development of these different varieties we must allow so much time that (even at the lowest estimate, and bearing in mind the date of Saint-Etienne, Beauvais) French influence on their beginning is out of the question, and M. Lefèvre-Pontalis' importation theory falls to the ground. Herr Dehio thinks that, as the whole series of churches to be taken into consideration, from Saint-Etienne, Beauvais, to Saint-Denis, show a marked borrowing from Normandy in respect of their form, there is considerable probability that they were influenced in their construction also.

M. Lefèvre-Pontalis' summary method of disposing of the evidence of the Norman vaults has not, however, been endorsed by some, at least, of his brother archæologists in France.††

* Unribbed and ribbed vaults are also found together at Poissy, Saint-Martin des Champs, Paris, and Saint-Germer. The crypt of Suger's ambulatory at Saint-Denis has unribbed vaults and semicircular transverse arches.

† The earliest examples of the ribbed vault in the dioceses of Amiens and Boulogne, described by M. Enlart (pp. 51 and 132), are Airaines and Lucheux, both of which he assigns to the second quarter of the twelfth century. In both cases the transverse arches are pointed.

‡ The single square bay of the nave of Bellefontaine is flanked by aisles of two bays, and M. Lefèvre-Pontalis (ii. 6) says that the architect "avait imaginé une disposition qui fut appliquée plus tard dans la nef de la cathédrale de Noyon." But the nave of Bellefontaine seems to have been covered with a quadripartite vault, and there is no suggestion of the sexpartite form.

§ *Die Kirchliche Baukunst des Abendlandes*, by G. Dehio and G. von Bezold, i. 427.

‖ E. Lefèvre-Pontalis, i. 89.

¶ *L'Architecture normande aux XI^e et XII^e siècles en Normandie et en Angleterre*, by V. Ruprich-Robert. Saint-Etienne, Caen, nave (pl. 83 and 84); Creully, nave (pl. 87); Petit-Quevilly (pl. 88). *Cf.* Sainte-Trinité, Angers (*Die Kirchliche Baukunst*, pl. 108).

** *L'Architecture normande*, Sainte-Trinité, Caen, nave (pl. 74 and 75); Bernières-sur-Mer, nave (pl. 78); Saint-Gabriel, choir (pl. 80 and 81).

†† *E.g.* M. Louis Régnier, in *Les origines de l'architecture gothique*: — . . . "Lorsque l'on examine les voûtes d'ogives qui existent . . . à Caen et aux environs de cette ville, comment expliquer que l'on ne trouve, dans les profils ou les supports de ces voûtes, rien qui rappelle les dispositions adoptées autour de Senlis? M. Lefèvre-Pontalis, c'est vrai, les attribue à l'année 1160; mais il ne donne et ne peut donner aucune preuve à l'appui de son opinion, toute de sentiment. Les voûtes normandes peuvent tout aussi bien remonter à 1130 qu'à 1160: leur date exacte est un problème dont nous n'avons pas encore la solution. En

M. Anthyme Saint-Paul, whose notable contributions to architectural archæology entitle his judgment to great weight, is convinced that, among the Norman vaults, there are some which are earlier than, or at least contemporary with, Saint-Denis, and he considers that the time has come when we must inquire whether Normandy must be associated with the transitional movement or not.* He admits a *double-courant*, from Picardy and from Normandy. That from Picardy, which embraces the group to which M. Lefèvre-Pontalis ascribes exclusive importance, adopted the pointed arch almost as soon as it began to use the ribbed vault. That from Normandy extended up the valley of the Seine, and has left behind the church of Poissy as its principal monument; it fully understood the value of the ribbed vault, but stopped short of the adoption of the pointed arch. Herr Dehio thinks that if, with M. Anthyme Saint-Paul, we go so far as to recognise not only the independent origin of the transitional movement in Normandy, but also its influence on Poissy, we must go still further, and admit that Norman influence extends to Saint-Denis, and there unites with the Picard stream. The influence of Poissy on the cathedral of Sens (commenced in 1140) seems to be generally admitted, so far as the choir is concerned,† and Herr Dehio thinks that the sexpartite vaults of the nave of Sens show the influence of Normandy—a point of some interest to us in view of the subsequent connection between Sens and Canterbury. The abbey church of Saint-Germer,‡ too, suggests to him influence from Normandy rather than from Saint-Denis. His general conclusion, put forward with some reserve, is that Normandy developed the sexpartite vault and its abutment by triforium galleries, or occasionally by abutting arches concealed under the roof; that the school of the Ile-de-France first recognised the importance of the pointed arch as a means of adapting the ribbed vault to varying plans; and that at Saint-Denis the two lines of thought coalesced, from which time the precedence of the Ile-de-France was assured. From a low position among the schools of Gaul, it rose at once to the first.§ Its former weakness was really an advantage, for it was less hampered by tradition, and had less to forget.‖ It was favoured, too, by the circumstance that, after the comparative inactivity of the Romanesque

présence de pareils faits, il n'est permis à personne de soutenir que les constructeurs de la Lombardie ou de la Normandie copièrent les églises du Beauvaisis et du Valois, en un mot qu'ils empruntèrent de toutes pièces la croisée d'ogives aux architectes de ces contrées. Plus juste et plus logique serait, à mon avis, le parti d'admettre que, dans chaque pays, il s'est trouvé des architectes habiles, préoccupés du souci constant de perfectionner leur art et capables enfin d'avoir trouvé à peu près simultanément le moyen d'augmenter l'étendue des voûtes." (*Mémoires de la Société historique et archéologique de Pontoise et du Vexin*, xvi. 119–120).

* As M. Anthyme Saint-Paul's opinion has such an important bearing on the subject of this paper, I quote at length the following passages from *La Transition* (cap. vi.):—"L'heure me semble venue de nous demander s'il faut, oui ou non, associer la Normandie au mouvement transitionnel. Nous l'en avions exclue, sur trois présomptions, il est vrai, défavorables: les plus anciennes voûtes à ogives y sont souvent des reprises postérieures; elles n'y admettent pas l'arc brisé; les églises gothiques du XII^e^ siècle, au lieu de dériver des traditions locales, y sont des importations françaises. Mais si les moyens ont été faibles et le résultat incomplet, s'ensuit-il qu'il n'y ait pas eu un effort intelligent et que cet effort n'ait pas aidé à l'effort général? Pourquoi donc la Normandie n'est-elle pas arrivée au port la première? Serait-ce pour avoir commencé trop tard? Ne serait-ce pas, au contraire, à cause de son obstination à repousser l'arc brisé, et n'y a-t-il pas là encore une preuve de l'impuissance où se fût trouvée l'ogive à constituer une architecture absolument nouvelle sans le concours du tiers-point? . . . . La Normandie a mis autant d'ardeur à adopter la nervure que le bassin de l'Oise à s'emparer de l'arc brisé; elle a excellé tout de suite dans le maniement de la croisée d'ogives, jusqu'à se faire un jeu des difficultés qu'il présentait. Enclin à multiplier les lignes dans les archivoltes, les jambages, les piliers, le Normand ne pouvait manquer de les ramifier dans les voûtes. De là les voûtes à huit divisions sur plan carré, comme celles de Saint-Romain (Rouen); de là les voûtes sexpartites, comme celles de Caen et de Creully; et, parmi ces voûtes, j'en suis convaincu, il en est d'antérieures à Saint-Denis ou tout au moins contemporaines. A plus forte raison seraient antérieures ou contemporaines les voûtes à croisées simples, comme celles de Montivilliers (croisillons), de Fontaine-Henri, de Lessay. Il y aurait eu ainsi, avant l'importation du style ogival rudimentaire, une phase sans connexion directe avec cette importation et durant laquelle la Normandie, spontanément, aurait fait un usage magistral de la nervure sans s'astreindre à lui joindre l'arc brisé."

† A. Saint-Paul, p. 29. L. Gonse, p. 82. E. Lefèvre-Pontalis, i. 84.

‡ About 1140, according to M. Lefèvre-Pontalis (i. 85); not earlier than 1150, according to M. Anthyme Saint-Paul (p. 42).

§ "L'école française n'existe bien clairement que comme école gothique; une des plus faibles vers 1120 ou 1130, elle devient bientôt après la plus importante de toutes." *Histoire monumentale de la France*, by Anthyme Saint-Paul, 4th ed., 1895, p. 124.

‖ *Cf.* Sir G. G. Scott's *Lectures on Mediæval Architecture*, i. 125.

period, architectural undertakings of considerable importance crowded fast upon one another. Normandy, on the other hand, did not reach a complete early Gothic style, but she had fully answered certain definite prior questions, which indeed, as it happened, benefited the neighbouring French school much more than herself. The importance to architectural history of these answers is not on that account to be less highly estimated.*

According to M. Lefèvre-Pontalis' theory, Anjou† and Burgundy, as well as Normandy, derived the ribbed vault from the Ile-de-France. Herr Dehio's criticism of this view may be briefly summarised here. He attaches special importance to the cathedral of Saint-Maurice, Angers. This is lightly dismissed by the writers of the Ile-de-France school as being nine years later than Saint-Denis. It is true that the vaults of Saint-Maurice were begun between 1150 and 1153, but the form of the supporting piers and walls proves that they were planned from the first. In view of the colossal dimensions of the building, the beginning of its construction must be put back eight or ten years at the least; that is to say, the master of Saint-Maurice might just have managed to know the narthex and choir of Saint-Denis, but not the nave, which was erected after 1144. After analysing the construction of Saint-Maurice, Herr Dehio says "the fundamental idea of the Gothic system, the separation between parts which are structurally effective and parts which are mere screens, is here thought out with absolute clearness, and carried into execution with a boldness equally great—the span of the vault is more than 16^{m}" (about 54 feet). Apart, however, from this fundamental idea, everything in Saint-Maurice is different from Saint-Denis, "and the notion that the scheme of Saint-Maurice was derived from Saint-Denis is so absurd that it would be a waste of words to say anything more about it." There was, in fact, an independent development of the rib-construction in the district of which Angers is the centre, and Saint-Maurice and Saint-Denis should be placed side by side as the first two Gothic monuments.‡

After a word on the importance of the cathedral of Chartres, where the southern tower was rib-vaulted in 1134 and the northern in 1145—which evinced its artistic priority over Saint-Denis by lending to it sculptors out of its workships—Herr Dehio concludes with a note on the architecture of Burgundy. This district had, like Normandy, done great things in the late Romanesque period, and was familiar with the basilican plan, and with constructive elements such as the pointed arch and barrel and groined vaults. The principal builders in the twelfth century were the rival orders of Cluny and Citeaux, the former adhering to the older traditions, while the Cistercians began the early Gothic movement in this district. The oldest known example of this is the abbey church of Pontigny, built soon after 1150. It is possible that there here really was (what we must deny in the Norman and Angevin schools) influence imported from the Ile-de-France, but in that case it can only have affected the most general elementary ideas, since in the hands of the Burgundian Cistercians it assumed quite a peculiar form. The Cistercians attended to the logic of construction rather than to more artistic features, and the ascetic tendency in their work checked the free development of the style. Otherwise Burgundy, with its great architectural endowments, would have exercised more influence on the development of Gothic in France than was actually the case.

In his conclusion, Herr Dehio thus summarises the difference between the ruling theory and his own:—

"According to the former, the Ile-de-France has the sole and solitary claim to be called the

* G. Dehio, p. 11.

† Of Anjou M. Lefèvre-Pontalis says—"La croisée d'ogives était utilisée dans la région parisienne depuis un demi-siècle, quand elle fut importée en Anjou. Les voûtes qui caractérisent le style Plantagenet ne représentent donc pas un acheminement vers l'arc ogive: elles sont au contraire l'émanation directe des voûtes gothiques bâties dans la région parisienne au début du XII^{e} siècle. La nervure se transforma dans les églises de l'Anjou et du Poitou, par suite de l'influence locale de la coupole, mais elle y a gardé néanmoins l'empreinte de son pays d'origine" (i. 65).

‡ M. E. Corroyer's theory that the ribbed vaults of the Ile-de-France were derived from the domical vaults of Aquitaine is, of course, quite erroneous.

cradle of Gothic; already in the first decades of the twelfth century it was the teacher of the neighbouring provinces in the systematic use of ribbed vaults, and all that presents any analogy to Gothic in these provinces was merely an echo of the art originating in the Parisian district. On the other hand, according to my theory," he says, "the sources of Gothic were more widely spread, from Normandy and Anjou to north Burgundy; there was no centre dominating the whole area; certain mutual influences existed between the single schools, though independence of execution was the rule; extraordinarily simultaneous was the appearance of the first clearly defined master buildings of Saint-Denis, Sens, Chartres, and, a little later, Pontigny; after the middle of the century there was closer cohesion between Normandy, with the district between the Seine and the Loire, and the Ile-de-France; but, on the western and eastern wings, the Angevin and Burgundian schools were completely independent until the beginning of the thirteenth century. At that date there really appeared for the first time what the doctrine I am combating declares to have been the case from the beginning—centralisation under French leadership. In fact the historical phenomenon of Gothic would have had something accidental about it if its basis had been as narrow as is supposed, and if its to-be-or-not-to-be had depended from the beginning only on that single school. We can well imagine to ourselves that under different circumstances Gothic might have taken another form, but that it could have failed to appear at all is inconceivable. Moreover, it only came to full perfection in those parts of France where it was preceded by an indigenous early Gothic movement."

In summarising this discussion, I have quoted Herr Dehio's views at greater length than those of the French writers, partly because his work is less accessible to English students, but chiefly because he endeavours to fix the exact relation of the Norman school to that of the Ile-de-France with greater precision than do the French inquirers, with the exception of M. Anthyme Saint-Paul; and even he scarcely goes as far as Herr Dehio in this direction. It is clear, from what has been already said, that a certain conclusion on this point would be greatly facilitated if exact dates could be assigned to the earliest examples of the ribbed vault in Normandy itself. Unfortunately this does not appear to be possible. It does not seem to have occurred to any of the writers on this question that the works of the Normans in England might possibly contribute something to a definite solution of the problem. M. Lefèvre-Pontalis does indeed refer to them, but he asserts that the ribbed vault was not adopted in England until its employment was general in the west of France.* His opinions on this subject, however, need not detain us here, for they appear to be based, not on an examination of the buildings themselves,† but rather on the conclusions of M. Félix de Verneilh, to which I shall have occasion to refer presently. It would be strange indeed if some light were not thrown on this question by the Norman churches in England, considering their great size and importance, and the marvellous building activity of what we are accustomed to call the Norman period. It is true that, within some twenty or thirty years after the Conquest, certain individual characteristics appear, some of which we are justified in attributing to pre-Conquest building traditions, and that consequently in some cases we find a less strictly logical adherence to one type, both in plan and construction, than is usual in Normandy. But such is by no means invariably the case, and in respect of structure the evidence afforded by some of the English churches is of the greatest possible value in such an inquiry as this, especially as their dates can in a few instances be fixed with absolute certainty. It appears to me, therefore, that an attempt may be made with advantage to trace systematically the history of Norman vaulted construction in England, so far as the surviving

* E. Lefèvre-Pontalis, i. 89.

† It is difficult to account for the following passages on any other assumption—"La nervure apparaît seulement au-dessus du chœur de ce dernier édifice (Winchester), mais les voûtes de la nef ne furent établies qu'à la fin du XII[e] siècle" (i. 89, 90). Speaking of the pointed arch, he says—"Guillaume de Sens, maître de l'œuvre de la cathédrale de Cantorbéry, en fit un usage systématique; mais le plein cintre règne encore sans partage dans les cathédrales de Winchester, d'Ely, de Rochester et d'Oxford, qui appartiennent à la même période" (i. 103).

evidence permits. Such an attempt I shall venture to make in the second part of this paper, dealing for the most part with examples which can be exactly dated, and with analogous examples which illustrate the same tendencies. Although I must necessarily traverse what is to some extent familiar ground, still, so far as I know, no systematic effort has hitherto been made to treat Norman work in England from this very important point of view.* I ought, perhaps, to say that I have not the least sympathy with the attempts which have been made to claim an English origin for Gothic architecture;† such a claim entirely ignores the elementary conditions of the problem. From the building of Saint-Denis onwards, there can be no question as to the pre-eminence of the early French Gothic school. But the history of Norman architecture in England proves conclusively its complete independence of the school of the Ile-de-France, and goes far to confirm the view that the Norman school had no small influence on the beginnings of the French Transition.

* The full significance of Durham in this connection is missed by Dehio and von Bezold, owing to their ignoring the vaults of the choir aisles and transepts, and adopting Billings's mistaken dating of the nave vault (*Die Kirchliche Baukunst*, p. 416). It is very strange that Durham is barely mentioned in Ruprich-Robert's *L'Architecture normande*, though he claims to deal with English as well as Continental examples.

† Such as Sir J. H. Parker's paper, *On the English Origin of Gothic Architecture*, *Archæologia*, xliii. 73.

HASKINISED WOOD.

By Frank Caws [F.].

SURELY the world is full and overfull of marvels, to which too many of us who ought to be open-eyed are blind. Two days ago I knew no more of Haskinised wood than a babe unborn. I had large practical experience of Kyanised wood, and of creosoted timber; and in the non-flammable wood which the American Admiralty now employ (with that shrewd common sense so characteristic of their race) for the fittings of their warships I have been feeling a growing interest, and picking up piecemeal such information as comes casually drifting along. Representatives of this industry have occasionally looked in upon me, and have always left me with a too general impression that, though non-flammable wood will be put upon the British market, it is as yet not quite a marketable commodity. And while I have been waiting for promised further information about this non-flammable wood, but vainly waiting thus far, two nights ago a friend called on me to ask if I would accompany him to Newcastle Central Station Hotel on the following Saturday to see Colonel Haskin? "And pray, who and what is Colonel Haskin?" "Oh! hadn't I heard of his wonderful process of wood preservation?" "No, I hadn't; unless he were the non-flammable wood man—in which case I should be only too glad to meet him, as I was keen for particulars of the non-flammable process." "Well, no, Colonel Haskin was not that man at all. He was a sort of wood cooker, who did marvels by means of superheated steam, or something of the kind, which my friend, to whom also the whole thing was new, did not feel able to explain in detail. But he had seen the woods which had been treated, and felt sure it would interest me to see them myself, and meet Colonel Haskin; and he would doubtless tell me all about it."

Well, one has had many new things put before one in one's office. As every architect knows, it is one of the privileges (?) of having an office, to find oneself a confidant of hopeful inventors in the building and allied trades, and one's office a common receptable for bricks and stones, and patent ventilators, and catalogues and prospectuses galore. Beautifully bound and got up volumes, many of them; but one's time and office space are sadly too limited to accommodate a tithe of the untold treasures of art and of inventive talent that are poured in such unstinted measure at one's feet. Even the returned strainers of disappointing competitions, which make such a cemetery of monuments in the garrets and retired corners of one's offices—monuments of one's wasted energies—even these phalanxes of returned strainers are scarcely so greedy of space, and of dust, as all the specimens of art and manufacture "brought from under every star, and blown from over every main," which afflict the sight and soul of that good-natured lover of neatness, your old-established country architect.

And now, upon top of all this, comes a request for one to leave one's stacks of strainers, and one's heaps of bricks and stones, and one's small nursery of patent ventilators, and sally forth to meet an American colonel, a real live inventor, and his blocks and slabs of mummified wood. Really it all seems farcical, this eternal procession of inventions and inventors, and wearying to the mind. But, seeing it would please my friend, I said that for once in my life I would go out of my way, and actually travel to Newcastle to meet this great wood-cooker, this founder of Haskinating (whatever that might be!), and see and hear all he could show and tell me. And so I went.

Before setting forth, I read in that morning's Newcastle paper a report on Haskinisation, by Mr. Vaughan, of Vaughan & Dymond, Engineers, Newcastle. This report gave me a more intelligent notion of the process than I had previously gathered from my friend, but still left many points to clear up.

I found Mr. Vaughan with Colonel Haskin, and I told him at once I had read his report, and there was one part of it which was in accord with a belief I myself once held, but of which a little bit of practical experience many years ago had finally disabused my mind. Mr. Vaughan's report stated that the creosote oil did not, in the creosoted timber, penetrate as a rule more than about half an inch beneath the skin. Any one would think so on looking at the end of a balk of cresoted timber where sawn through; for a black ring, of about half an inch round the outside, enclosed an area of sawn wood as clean and apparently innocent of impregnating oil as though it were fresh cut from the forest. But I on one occasion made some wedges out of the clean heart-wood of Baltic timber which had thus in the balk been creosoted. There was no show of creosote on these wedges when they were cut. But when they were driven by screw-jacks into their assigned places in the engineering work I was busy with, they sweated profusely *black blood*. The fact thus appeared that, though apparently innocent of oil, they were thoroughly impregnated. But as the oxygenising of the oil gives it its black colour, and as the oil in the

heart-wood was remote from the access of oxygen, it was colourless till, on exuding under the very severe pressure to which these wedges were subjected, it turned black where the oxygen met it. Mr. Vaughan offering no rejoinder to this statement, I turned to Col. Haskin, and remarked that I, in my lifelong wish to see fireproof building generally adopted, felt a special interest in what I had heard of non-flammable wood. I should not have been surprised had the Colonel treated this remark as a *challenge*; and it would only have been natural had he forthwith proceeded to inveigh against a system of treatment of timber which I had thus put forward as potentially preferable to his own. But, far from seeking to decry by word or gesture the non-flammable method, the Colonel made me at once feel that he had nothing to urge against it, and quite sympathised with the interest I felt in it. His fairness of attitude towards what appeared to me a rival system at once predisposed me to give an unbiassed hearing to the explanation of his own system, which he now, as he courteously invited me to a seat, proceeded to give in reply to my questions.

The difficulty in such explanations often is to know how and where to begin, and I cannot remember exactly where my many questions began; but certainly the Colonel answered them very carefully and clearly, patiently labouring to clear the path for me, and I soon began to feel I was conversing with a delightfully ingenuous and thoroughly informed teacher, whose statements were absolutely untinctured by egoism or exaggeration; and very soon I found myself enthralled by his interpretations of Nature's processes of growth and development, the truth of which was as perfectly obvious as new to me. He said that in his younger days, when he was at some creosoting timber establishment in America, he was greatly struck with the quantities of fluid which were withdrawn from the timber when the vacuum was produced in the cylinders, previous to forcing in the impregnating oil. And he had taken quantities of this wasted sappy fluid home with him frequently at night, and experimented with and studied it, having from the first an idea that, if it were retained in the timber and properly dealt with, it would form a means of preservation rather than a cause of decay.

For Nature herself had taught him, by her example, a method of incorporating the tree juices and gums with the more solid fibre, and retaining them in a permanent compact of homogeneity. "You see," continued the Colonel, "the sap which rises from the earth into the tree never returns into the ground again. It flows into the space between the bark and the outer surface of the trunk, and is, while held there, acted upon by the heat, which would cause it to expand, while the bark binds it in and compresses it; and this process of heating and compression solidifies it by slow degrees, binding it to the new ring of fibre which each year's growth adds to the trunk." And then he went on to show that his patented process is likewise one of applying heat and pressure until the gums and juices of the tree are reduced from their plastic or semi-fluid to a solid state. I asked, "But what becomes of the *water* in the tree? You cannot convert that into a permanent solid, can you?" "I am glad," said Colonel Haskin, "that you have raised that point. Perhaps the best illustration I can give you of the result, so far as the water is concerned, is what happens to the water in an egg, when boiled hard. You know there is a very large percentage of water in an egg, and so there is in a tree trunk. If you weigh the egg before and after boiling, you will find its weight is unaltered by the boiling. None of the water has escaped. The shell and its lining forbid the escape of any fluid. But the heat of the water in the saucepan induces the contained fluids to seek to expand. Their expansion is forbidden by the resistance of the shell, and compression of the fluids results. The consequence is the water combines with the other contents of the egg, and all becomes solid. It is just the same with the fluids in the tree when treated by my method."

"Thank you, Colonel Haskin. You have made that quite plain. I had never thought of it in that way. And so you put your stacks of timber into the cylinder in the same way as if you were going to creosote them?"

"Yes, under a pressure of 200 lbs. to the inch, which is a very much higher pressure than is employed for forcing in the creosote oil. And, you see, I do not begin by creating a vacuum and extracting—as is done before creosoting—the fluids from the timber."

"I see that. Then am I to understand that your method dispenses with the need for seasoning the timber before it is treated?"

"That is so. We take timber fresh-cut, even though it be timber of the youngest and most rapidly growing kind, such as is common in some parts of my country, and we put it into the cylinders, and treat it right away. Our process is the same as Nature's. But what Nature takes a long time—years and years—to effect, this process accomplishes by great pressure and great heat combined in a *few hours*. Of course the time required by my system, though usually about six hours, varies according to the nature and condition of the timber we are dealing with. But it is always a question of a few *hours'* difference only."

Here the Colonel drew my attention to one of the many specimens with which his room was crowded—a large plank of poplar of great width and beautiful colour, highly polished. "Only a

few weeks have passed," said he, "since the tree of which this is part was growing green. It was treated by my process immediately after it was cut down."

He went on to explain that newly cut timber is always much heavier than seasoned timber, because the fluids of the latter have had time to evaporate. And it was only necessary for me to lift the various specimens in the room to satisfy myself of their having retained all their original density.

The Colonel dwelt on the well-known fact that at great altitudes, where the atmospheric pressure is less than 15 lbs. per inch, water will boil at less than 212 degrees Fahr., and will evaporate. By working with a 200 lbs. per inch pressure in the cylinders containing the timber, he is able to heat the air considerably over 212 degrees without the juices of the timber being boiled or evaporated. And in this respect also the inventor relies on the natural law of evaporation in its relation to pressure and heat.

On examining the numerous specimens of many different woods in the room, I found that all were alike indurated, and rendered so dense that the commonest pines and poplars took as high a polish as the hardest rosewood or mahogany; and I remarked, "It strikes me, Colonel Haskin, the effect of this process must naturally be to reduce very greatly the market for fancy woods of high price; seeing that the commonest woods, when Haskinised and polished, are of extremely beautiful appearance, the natural features of their grain and figure being *emphasised*. And at the same time the commonest woods are rendered by this process apparently as proof against decay as the hardest woods now in the market. But how about the *cost* of the process?" "Well," replied the Colonel, "we have nothing to put into the wood—no oil to buy, for example—and so we can afford to do the work at less cost per cubic foot than creosoting; we can, in fact, do it for 3*d*. per cubic foot, and less than that, according to circumstances."

"But now, what about shrinkage?" I asked; "and let me say, Colonel Haskin, that perhaps that is one of the most important questions you can be asked to answer as bearing on the probable success of your invention, so far as regards its employment for ships' decks and joinery and cabinet work. You are doubtless aware that teak is almost the only wood which does not shrink very perceptibly, and on that account teak, notwithstanding its high price, is greatly liked for joinery and cabinet work, where exquisite finish and freedom from shrinkage go hand in hand."

"Yes," he replied, "and you know, with woods generally, the greatest amount of seasoning does not put an end to shrinkage; for if you replane old boards, no matter how old they may be, they will, in most cases, show further shrinkage after being redressed with the plane."

"Certainly, Colonel; every experienced architect would corroborate that statement as being not less true than remarkable."

"Well, think of it," said he; "consider the great heat and pressure to which, in my process, the wood is subjected. It is so very great as to render the material subsequently indifferent to changes of temperature such as, in the cases of untreated woods, induce shrinkage; which are very trivial by comparison."

"How does Haskinised wood suit tools?" I asked. "Does its additional density make it harder to work?"

"The reverse is the case," replied the Colonel, "for the tool, in working unprepared wood, has to deal with hard fibre and soft integument at the same time; so that the resistance on the cutting edge is more or less unequal, according to the nature of the wood, the tool being jerked or jumped more or less in consequence. But in working wood which has been vulcanised—or, as some people have now got to call it (after me), 'Haskinised'—the plane or chisel, or the tool whatever it may be, encounters uniform resistance, and works in consequence all the more smoothly and pleasantly."

"Do you not find, Colonel Haskin, that the wood, through being so heated and dried, becomes brittle and short—that is to say, loses its elastic strength?"

In reply to this question, the Colonel unlocked a large flat cabinet, and showed me its contents. He said: "All these slips of wood are, as you see, of one inch square section. They were all cut from the same pitch-pine plank. Half of the number have been treated by my method, and the other half not. The plank was 6 feet long by 1 inch thick, and of such width that six strips, each an inch wide, were cut from it. Then these six strips were cross-cut into twelve lengths of $2\frac{1}{2}$ feet each, six lengths of 5 inches each, six lengths of 4 inches each, and six lengths of 3 inches each. The short lengths were compressed till they crushed, and the long lengths were loaded as beams till they broke transversely. The experiments were made by the testing machines of the Stevens Institute, Hoboken; and here you see on each piece is ticketed the exact number of pounds stress which broke it. There were eighteen distinct experiments of crushing, and in every one of those the vulcanised wood proved stronger than that not vulcanised, the average superiority being over 23 per cent. Then in transverse strength thirty-six experiments were made, in every one of which the vulcanised wood proved stiffer and stronger than that not vulcanised—the average difference being, in the

modulus of rupture, more than 21 per cent., and in the modulus of elasticity, 20 per cent., in favour of vulcanisation."

"Of course you will understand," continued the Colonel, "that in some cases the effects of vulcanisation on the strength of wood will be not so great, and in other cases even greater, than these experiments show, as the amount of difference must depend largely on the nature and condition of the wood treated. But you may take it as proved that in all cases, without any exception, vulcanising timber strengthens it."

The Colonel gave a humorously luminous account of the havoc wrought on timber and woodwork generally by insects. He spoke of the need for insect powders, and all sorts of specifics for dissuading the vermin from harbouring in the woodwork of dwelling-houses and other buildings. "Why do they come?" he asked. "Because in the soft parts of the wood they find their food, They come because they are hungry."

I could not help laughing at this quaint theory of the vermin pest. Yet it struck me as being very rational, and I said so. Then the Colonel lifted a large lump of very dry-looking wood from one corner of the room, and placed it on the table before me. "A friend of mine," he said, "who traded to India, after telling me of the terrible voracity of that timber devourer the white ant, asked me to let him test my system by giving him a piece of treated timber to place in a white ant's nest. So I gave him that very piece of pine. There it is, you can see for yourself. It has been left lying in white ants' nests for very long periods, first in one nest, then in another, and still another. But they have all, as you see, left it quite untouched."

In another corner of the room stood a heavy railway sleeper which had been thirteen years laid in America, and it looked to me as if it might have continued in use another 130 years without deterioration. And I learnt that Haskinised sleepers are now largely used in America.

The Colonel remarked that Egyptian mummy coffins appeared to him to have been in some degree Haskinised, by burning or charring both within and without. "Also," he said, "when we char the ends of posts which we embed in the ground, that undoubtedly acts upon the skin of the wood charred in the same way as my process does."

He showed me photographs of the works recently established at Millwall-on-Thames, where there are several very strong cylinders, each more than 100 feet long, having a railway running through each. The timber to be Haskinised is stacked on little iron trucks and run into the cylinder; then the cylinder door at one end (a wonderful piece of mechanism this door is) is fastened, and the air-pumps, driven by powerful steam-engines, force the air through the cylinder after first forcing it through a furnace where it gets heated to a high temperature. The air-pipes are so arranged that when one cylinder is being charged with, or emptied of timber, the other cylinders are full charged and working. And in order to avoid loss of heat and loss of time, many wise mechanical precautions have been employed by Messrs. Gallaway, of Manchester, the well-known makers of boilers and engines, who have fitted up the Millwall establishment, and are likely to fit up other similar establishments throughout the United Kingdom and abroad.

The Colonel told me the Directors of the North-Eastern Railway Company had visited him on the previous evening. He has secured from them, I understand, a very big order, viz. for all the timber work—some hundreds of thousands of cubic feet—required for the new coal staiths at Dunston-on-Tyne, near Newcastle; and arrangements are now being made for setting up on the Tyne an establishment for Haskinisation, like that at Millwall.

At the close of a two hours' exceedingly instructive conversation, only a few of the more salient points in which I have been able to summarise in this sketch, I came away, feeling really glad that I had, for once in a way, come out of my office to see something and learn something well worth going much further to see and learn.

The Colonel was greatly pleased and interested when I told him I possessed at home a piece of "Haskinised wood" (*naturally* Haskinised) which the most learned geologists considered may be about twenty thousand years old—a piece of bog oak, dense as iron, black as coal, and immensely strong—and to all appearance absolutely everlasting in its strength and incorruptibility. "Ha!" said this wood-curing enthusiast, his eyes glistening as he spoke, "I *should* like to see *that!*"

In pondering, since this interview, on the fields likely to open for the employment of Haskinised wood, the prospect seems to me to grow wider and vaster the more I scan it. How delightful to think of the artistic possibilities this invention opens up to external as well as internal architecture! The sense of impending decay, hitherto marring one's pleasure at the sight of beautiful and quaint modern half-timbered villas, will become a thing of the past when we use Haskinised timber. Why should floor-joists, floor-boarding, wall-plates, lintels, beams, and roofs be constructed of corruptible decaying timber, when timber decay-proof can be found? Baltic white wood, such as jerry builders use for its cheapness, if Haskinised at 3*d.* per cube foot, will prove cheaper than the best Baltic red wood, and also more durable. Paint will no longer be needed to protect external woodwork, if it be Haskinised, and the lovers of Ruskin and of unvarnished honest reality in

architectural effects may well rejoice that the lying paint no longer need be requisitioned to hide ever increasing corruption and decay in the woodwork about the jerry-built homes of the million. Nor will the homes of the people continue to harbour in their timber repulsive insects.

But while in architecture, both at home and abroad, and especially in our forest-clad colonies, the scope for Haskinisation is vast beyond all estimation, it is also likely to be largely employed in engineering works; not only for railway sleepers and piles, and timber work generally, to quays, docks, coal staiths, and the like structures, wherein it has been customary to employ creosoted timber, but also in many cases *as a substitute for steel* or iron.

Railway bridges are needed in extensive districts of Canada and Africa, as well as in non-British lands, where timber is abundant, but where steel cannot be conveyed, except at such great cost as to make it worth its weight of some much more precious metal when its gets there. Say Haskinising works were established at Dawson City, Alaska, and at Bulawayo for example; then the cost of railway bridges and other engineering structures would be greatly reduced by employing the Haskinised native trees, instead of steel from England or the United States. That is a consideration which Mr. Cecil Rhodes might just now reflect on to some advantage, confronted as he finds himself by the necessity of cutting the coat of his dream of African British Empire according to the cloth of vulgar £ *s. d.* considerations.

Those famous timber constructions, the high-level bridges on the North-Eastern Railway in the neighbourhood of Newcastle and Durham, erected two generations ago by "Ben." Green—that clever North-country architect, long dead, and wellnigh forgotten—have, till recently, sustained the constantly increasing weight of railway traffic in this busy centre of national industry; and had they been Haskinised, they would not have needed to be removed or superseded.

What a satisfaction it would be to know that the timber of St. Paul's external dome had been originally Haskinised, so as to be proof against the decay now awaiting it! And the same remark applies to all the perishable timber of our noblest public and private structures.

For ships' decks, Haskinised planking is likely to come into great demand.

It is being extensively used in America for the elevated railways, and especially for the exposed platforms of same; and is certain to be largely employed for telegraph poles and other electrical requirements.

For railway carriages and tramcars, as well as for private equipages, there would seem to be in Haskinisation a perfect godsend of improvement and a great saving of the periodical cost of painting and varnishing.

There seems no room for doubt that wood pavements of Haskinised timber will stand the wear of traffic better than the ordinary creosoted blocks, for creosoting timber does not indurate it as Haskinising does.

It would be futile to attempt to forecast the directions or the extent of the influence of Colonel Haskin's invention on the architecture and engineering of the future, or on the thousand-and-one other kinds of construction which cannot be regarded as either the work of architect or engineer.

That a man should have discovered how, at small cost, to render timber everlasting and decay-proof appears to me an invention of that *seed-like* nature which cannot but suggest vast possibilities of growth such as it would be idle to even attempt to dream of at present, but which will not fail to put themselves into evidence as time goes on.

9, Conduit Street, London, W., 11*th March* 1899.

CHRONICLE.

Prizes and Studentships 1899–1900.

Full particulars of the Prizes and Studentships for 1899–1900 will be found in the pamphlet issued to members with the present number of the Journal. The following is a brief summary:—

The Essay Medal and Twenty-Five Guineas, open to British subjects under the age of forty.—*Subject:* A Review of the Architecture of the Elizabethan Period (about 1550–1620).

The Measured Drawings Medal and Ten Guineas, open to British subjects under the age of thirty.—Awarded for the best set of measured drawings of any important building—classical or mediæval—in the United Kingdom or abroad.

The Soane Medallion and One Hundred Pounds, open to British subjects under the age of thirty.—*Subject:* Design for a School of Fine Art placed in a Park or Public Garden.

The Pugin Studentship: Silver Medal and Forty Pounds, open to members of the architectural profession (of all countries) between the ages of eighteen and twenty-five.—Awarded for the best selection of drawings and testimonials.

The Godwin Bursary: Silver Medal and Forty Pounds, open to members of the architectural profession without limitation of age.—Awarded for the best selection of practical working drawings, or other evidence of special practical knowledge, and testimonials.

The Owen-Jones Studentship: Certificate and One Hundred Pounds, open to members of the architectural profession under the age of thirty-five.—Competitors must submit testimonials, with drawings exhibiting their acquaintance with colour decoration and with the leading subjects treated of in Owen Jones's *Grammar of Ornament*.

The Tite Prize: Certificate and Thirty Pounds, open to members of the architectural profession under the age of thirty.—*Subject:* Design for an Isolated Clock Tower and Belfry.

The Grissell Gold Medal and Ten Guineas.—*Subject:* Design for a Spiral Staircase.

The Ashpitel Prize: Books value Ten Guineas.—Awarded to the student who distinguishes himself most highly in the Institute Final Examinations 1899.

The Arthur Cates Prizes: Books value Ten Guineas.—Presented by Mr. Arthur Cates at each Final Examination to the Student (passing the examination) who submits the best set of Testimonies of Study together with certain additional drawings.

Copies of the pamphlet may be obtained at the Institute, price threepence each.

Reinstatement.

At the Meeting of the Council held on the 20th ult. Mr. Thomas Bradford Ellison, of 21 Donaldson Road, Kilburn, N.W., was reinstated an Associate of the Royal Institute.

The New Vauxhall Bridge.

The following letter appeared in *The Times* of Monday the 6th inst.:

To the Editor of The Times.

Sir,—Will you allow us to call the attention of your readers to a matter which seems to us of urgent importance? A new bridge over the Thames, occupying an important situation and involving an outlay of half a million, cannot and ought not to be regarded as a mere utilitarian structure for traffic alone. It should be so designed as to be also a work of architectural beauty and fitness—a new ornament to the capital. To this end it seems to us that its architectural and decorative treatment ought to be entrusted to one who has made a life study of such matters.

The London County Council's design, prepared by their chief engineer, was published in *The Builder* in January. Its structural merits we do not question, but while the intention of making what is called a "handsome" bridge is evident enough, there is evidence also of the absence of the artist's hand, refining and harmonising the whole.

The publication of the design at once roused protests in your columns and elsewhere from those most competent to form an opinion upon such matters. The leading London architectural societies (the Royal Institute of British Architects and the Architectural Association) have condemned the design in unqualified terms. The Institute coupled its protest with a request that the Chairman of the London County Council would receive a deputation on the subject from some of its leading members. This proposal has been declined, and all protests ignored. To all appearance the County Council is bent upon carrying out a design at once pretentious and costly, but lacking in those qualities which would make it in any way comparable to Waterloo

Bridge or London Bridge, of which we are justly proud.

We desire to make our emphatic protest against the execution of this design in its present form, and to express our opinion that in this country, as in France, the design of an important bridge, where any attempt is made beyond utilitarian construction, ought to be placed in the hands of a competent artist, who should be responsible for its architectural detail, as the engineer is for its structure.

For the want of this collaboration of the architect with the engineer, we have already seen the erection of three bridges of deplorable design —those at Blackfriars, Battersea, and Hammersmith. We are now threatened with a fourth.

The substitution of a good design, so far from increasing the cost of the bridge, would be rather likely to diminish it, since some of the features added for the purpose of adornment appear to us incongruous and unnecessary.

The London County Council has to seek Parliamentary powers for the erection of any bridge across the Thames. If it refuses to listen to advice or suggestion on matters artistic, the ratepayers of London, or those among them who care about the architectural dignity and improvement of the capital, should look to Parliament for some future safeguard against any repetition of the expenditure of public money upon structures such as that now proposed, which, in despite of the costly nature of its architectural accessories, will, we fear, reflect no credit upon contemporary architecture, upon London, or upon the London County Council.

We are, &c.

F. Cantuar.
Westminster.
Wemyss.
M. London.
Edward J. Poynter, P.R.A.
Edwin A. Abbey, R.A.
George Aitchison, R.A., President R.I.B.A.
Thomas Brock, R.A.
E. Onslow Ford, R.A.
T. G. Jackson, R.A.
W. B. Richmond, R.A.
R. Norman Shaw, R.A.
L. Alma Tadema, R.A.
Hamo Thornycroft, R.A.
G. F. Watts, R.A.
Arthur W. Blomfield, A.R.A.
G. F. Bodley, A.R.A.
Wyke Bayliss, President B.A.
F. C. Penrose, ex-President R.I.B.A.
G. H. Fellowes-Prynne, President Architectural Association.
W. Butterfield.
Mervyn Macartney, Master Art Workers' Guild.
John R. Clayton.

The following letter from the President appeared in *The Times* of Friday, the 3rd inst.:—

To the Editor of The Times.

Sir,—The County Council have got Parliamentary powers for erecting a new bridge at Vauxhall. It seems to me that, as London is fast becoming an architectural city, and is shortly to be adorned with the new Government offices, such an important structure as a bridge over the Thames should not alone serve the office of joining the two banks of the river together, but should also be an ornament to London.

We are justly proud of our engineers, who have carried iron construction to a pitch of perfection never seen before. The works of engineers, however, have been purely for use, and they have even stated that utility is their only aim—that it is a matter of indifference to them whether their structures are beautiful or hideous, so long as they fulful their purpose; and they look on sightliness as a botanist looks on the colour of a flower —as a thing of no consequence. Is it surprising, then, that when they attempt sightliness they fail?

In January last an engraving of the proposed bridge was published in the *Builder*, filling every admirer of beauty with dismay, for, if carried out, it would be an eyesore to London.

We are informed that our neighbours in France are about to build a bridge over the Seine. The rulers of that artistic and beauty-loving people have done all they can to ensure a worthy monument by associating two well-known architects with the engineers, while several eminent sculptors are nominated to execute the sculpture.

Surely the same methods should be adopted here.

It should be borne in mind that the fine monuments of a country form one of the most enduring records of its greatness, while the visitors who come to see them are a perennial source of revenue to the country.

Your obedient servant,

G. Aitchison.

150 Harley Street, W.

Professor Aitchison's letter was referred to by Mr. Zeph. King [*F.*] at the Meeting of the Institute last Monday. He said that the thanks of the Institute were due to the President for watching the progress of building in London, and for using his influence in regard to beautifying their city. His suggestion was a very happy one, that the example should be followed of their more artistic neighbours across the Channel, who employed engineers for constructing, architects for beautifying, and sculptors for adorning their bridges. He hoped the London County Council and the municipal authorities in other English cities would see their way to adopt it. The speaker concluded by moving a hearty vote of thanks to

the President for his excellent letter, and for the trouble he had taken in the matter. Mr. King's remarks were warmly applauded, and his motion, having been seconded by the Honorary Secretary, was carried by acclamation.

The President, in briefly acknowledging the compliment, said he thought the thanks of the Institute were rather due to Mr. Statham for his public action in the matter than to himself. But as far as his own intentions went, he was second to none in the desire to see London made beautiful and the profession of architecture much more honoured than it was at present.

That they manage these things better in France is strikingly obvious from the following letter received from M. Chas. Lucas [*Hon. Corr. M.*] :—

2 mars 1899.

A Monsieur W. Locke, Secrétaire de l'Institut Royal des Architectes Britanniques.

Monsieur le Secrétaire et cher Collègue,—Je ne pouvais répondre aussi sommairement que me le marquait votre lettre du 24 février à votre demande des conditions dans lesquelles s'exécutent les travaux du pont Alexandre III, jeté sur la Seine entre les nouveaux Palais des Champs-Elysées et l'Esplanade des Invalides.

Je voulais vous envoyer des renseignements précis pouvant vous servir d'arguments sans réplique pour l'intéressante campagne que vous allez entreprendre dans un but supérieur d'Art public.

Comme tous les travaux de l'Exposition Universelle de 1900, les travaux du pont Alexandre III sont placés sous la haute direction du commissaire général de l'Exposition, M. Alfred Picard, inspecteur général des Ponts et Chaussées, et sous la direction plus immédiate du directeur des services d'Architecture de l'Exposition, M. J. Bouvard, architecte, directeur des Services d'Architecture de la Ville de Paris.

Les ingénieurs chargés des études et des travaux techniques de construction du pont Alexandre III sont MM. J. Résal, ingénieur en chef des Ponts et Chaussées, et Alby, ingénieur du même service.

Les architectes chargés des études de la partie architecturale et de la partie décorative du pont sont MM. Cassien-Bernard, architecte des bâtiments civils, et G. Cousin, architecte diplômé par le Gouvernement.

Tous deux, en dehors de leur brillante carrière d'élèves à l'Ecole des Beaux-Arts, de leurs succès dans des concours publics et des édifices qu'ils ont construits, sont de véritables élèves de Charles Garnier, et le premier, après avoir été longtemps l'inspecteur de ce maître à l'Opéra, vient d'être appelé à lui succéder comme architecte de cet édifice.

Vous voyez donc que les architectes du pont Alexandre III sont architectes de talent et connus comme tels.

Maintenant étant donné que les distingués ingénieurs, MM. Résal et Alby, chargés d'étudier et de diriger la construction du pont Alexandre III, en ont donné aux architectes, MM. Cassien-Bernard et G. Cousin, ce que l'on pourrait appeler *le schéma*, c'est-à-dire le dessin du gros œuvre du pont tel que ce gros œuvre s'exécute avec son arche unique d'une si gracieuse envergure et avec ses points d'attache et de butée sur les quais, les architectes ont étudié et étudient chaque jour, et font de plus faire sous leur direction tous les modèles nécessaires, qu'il s'agisse des grands pylônes des extrémités du pont ou du raccordement du pont et de ses pylônes avec les murs des quais, et surtout des nombreux motifs décoratifs qui ornent la jonction des pièces métalliques entre elles ou la jonction de ces pièces avec la maçonnerie ; toutes notes d'art qui feront du pont Alexandre III une œuvre jusqu'à présent sans précédent au double vue de la science et de l'art ainsi que de l'intime union de la science et de l'art.

Comme vous le voyez, l'entente des ingénieurs et des architectes chargés de l'édification et de la décoration du pont Alexandre III répond à merveille à vos desiderata.

Je n'ai qu'un regret, c'est que vous ne passiez pas actuellement à Paris, vous ou l'un de nos distingués confrères de l'Institut Royal des Architectes Britanniques ; je vous conduirais rue Jean-Goujon, à l'agence de MM. Cassien-Bernard et G. Cousin, et vous les surprendriez, comme je les ai surpris hier à votre intention : l'un terminant une aquarelle à grande échelle indiquant la perspective du départ du pont du côté des Palais des Champs-Elysées ; l'autre étudiant une nacelle aérienne destinée au transport électrique des visiteurs d'une rive de la Seine à l'autre ; et la masse autant que la variété, le fini et le charme de leurs études vous montreraient toute l'importance de leur collaboration dans l'œuvre du pont Alexandre III.

Mais peut-être feriez-vous bien, pour être édifié plus complètement à ce sujet, de faire écrire par notre éminent président de l'Institut Royal des Architectes Britanniques, M. G. Aitchison, à S. Exc. M. l'Ambassadeur d'Angleterre à Paris, afin que Son Excellence veuille bien demander au Gouvernement français que MM. Cassien-Bernard et G. Cousin soient autorisés par MM. Alfred Picard et J. Bouvard à distraire, en faveur des collections de l'Institut Royal, quelques autographies d'ensembles et de détails des nombreuses séries d'études que, depuis longtemps déjà, ils font au jour le jour pour la décoration du pont Alexandre III.

Veuillez, monsieur le secrétaire et cher collègue, agréer l'expression de mes sentiments dévoués.

Charles Lucas,
Hon. Corr. M. R.I.B.A.

The Admission of Lady Associates.

At the Business Meeting of Monday, the 6th inst., Mr. Henry Dawson [*F.*], in accordance with the notice issued to members with the last JOURNAL, moved as follows :—

> "That, with the object of securing legal action in the election of candidates for membership of this Institute, the members thereof request the Council to obtain, at the earliest convenient date, the written opinion of some eminent Queen's Counsel of independent position as to whether women are eligible as Associates or Fellows under the terms and provisions of the existing Charter and By-laws of the Royal Institute of British Architects. And that the Council do report such opinion to the members at the earliest convenient date."

Mr. H. DAWSON said he wished, first of all, to make a few observations as regards his action in the matter. It would be accepted by all who knew him, and his age and position in the profession, that this was a matter of no personal or selfish interest on his part. He had taken it up really in the interest of the public and of the profession generally, and especially in that of the junior members of the profession. He had two objections to the action taken by the Institute in admitting a lady as an Associate. His first objection had been, and was still, in the interests of the public and of the profession. It would probably appear to some, at first sight, as somewhat singular that he should take up this position, because he yielded to no one in his strong advocacy of that important movement, the higher education of women. But when it came to applying the knowledge and the culture of women to our ordinary callings, there must necessarily be some limitations. In his humble judgment, one of those limitations was that of the profession of architecture. It was perfectly true that a lady of education and of proper professional training might be a very efficient assistant in the work to be done in an architect's office; but while stating his own view, he submitted it to the judgment and good sense of members, whether the more important part of an architect's duties, namely, his outside work in the conduct and supervision of buildings, could be performed by a woman in the efficient manner such duties ought to be performed. It must be remembered that the Institute Charter was granted for the study and practice of architecture, and he submitted that the election of women either as Associates or Fellows would tend to the prejudice and deterioration of the good reputation of the profession as being composed of competent men for practical knowledge and work. His second objection was in the interest of the junior members of the profession. It was no secret how difficult it was for hundreds of young architects to make a decent living in their profession: was it wise, therefore, was it expedient, was it even kind or considerate to these junior members to introduce another element of competition amongst them when competition was already so keen? Of course any lady of good training might, if she thought fit, take up the calling of an architect in London or the provinces or elsewhere; but was it wise or desirable for the Royal Institute of British Architects to promote and encourage ladies to do so, and thus bring about what was inimical to the material interests at all events of the junior members of the profession? But he would not dwell further on those objections. It would be said, and he fully concurred, that they were matters of opinion; but whether members differed, or whether they agreed with him, he ventured to believe that all would be desirous that in such a remarkable departure as that taken from the traditional practice of the Institute for over sixty years, in the election of a woman to membership, it was most important that the Institute as a corporate body, and that their executive, the Council, should be reasonably assured that their action in the matter was strictly legal, otherwise the Institute, and especially the Council, would be putting themselves in a false position. He should like to be allowed to explain to the Meeting what had prompted him to persevere in his motion. After the meeting of the 5th December 1898, when the election of a lady to the Associateship took place, on thinking the matter well over, he resolved that, in order to remove suspicion of his acting, even at the age of threescore years and ten, from a spirit of self-will or of too much confidence in his own opinion, he would incur the cost of obtaining counsel's opinion upon the matter; and with the determination that if such counsel's opinion should be in disagreement with his own views, he would retire from the contest and inform the Secretary of the Institute to that effect; but if, on the contrary, counsel's opinion should accord with and be in support of his own, then he should feel it his duty to proceed. Accordingly, with the aid of his solicitor, he obtained the opinion of counsel—not a Queen's Counsel, but a man well known as a very able barrister, Mr. Brooke Little—and he must say candidly that the perusal of that opinion convinced him that it was a most careful, decidedly cautious, and very impartial presentment of the case, and therefore its conclusions were proportionately valuable. Now, as he regarded those conclusions as being clearly in support of his views as to the ineligibility of women to membership of the Institute under the present Charter and By-laws, he considered it his duty to proceed with the motion. The case that was submitted to counsel was of a very simple form indeed; it was practically in these words: Whether under the terms and

provisions of the present Charter and By-laws women are eligible to be elected as members of the Institute either as Associates or Fellows. Mr. Brooke Little's opinion occupied nine pages; he went most impartially and carefully into the objections or arguments upon the opposite side and then replied to them. But, like some of the judges in the superior courts, who are accustomed sometimes to state the conclusions at which they have arrived before proceeding to expound the facts, Mr. Brooke Little's opinion really was contained in the first clause, which he would read. It began in a cautious way: "It is not easy to form an exact opinion in this case. There are reasonable arguments both in favour of and against the action of the Council, and I think that different minds might not unreasonably arrive at different conclusions as to the legality of that action. On the whole, however, I have arrived at the conclusion that the action of the Council in admitting a woman to be an Associate member of the Institute is, in the present state of the Charter and By-laws, *ultra vires* the Council." Afterwards, for the elucidation of the grounds of his opinion, he states three known canons of interpretation of statutes, and then, after referring to the generic descriptions, "loving subjects" and "persons" in the Charter, he calls attention to the incorporation clause (page 22 of the Institute copy) in these words: "It is to be "noticed however that in the incorporation "clause (p. 22) the Corporation is to consist of "present members of the Society and of those "who shall at any time hereafter become members "thereof according to such regulations or By-"Laws as shall be framed hereafter." (That was counsel's quotation). Mr. Little then argued—"So "that if the membership is restricted to men by "the By-laws, the immediate and present effect "will be the same as though the restriction were "imposed by the Charter itself." Then in another clause he gave a very crucial statement of the case: "In the By-laws themselves the "masculine gender is used exclusively throughout, "and the first By-law is a good type of all. "If the By-laws stood alone it would be "almost impossible to contend that they "are intended to apply to women as "members of the Institute." Then, after further arguments upon the interpretation canons, he proceeds thus:—"When it is borne in mind that "the original 'loving subjects'" (those words are a quotation) "forming the Society were all men at "the date of the incorporation of the Society, and "the admission of women into the professional "ranks of architects was not dreamed of, and that "during the 60 years of the life of the Society "none but men had been admitted to its member-"ship, and that in 1887 and 1889, when the new "Charter and By-laws were framed, no allusion "was therein made to the admission of women to "membership, any other interpretation of those "words will, I think, produce a consequence "which was never contemplated." Those words, "will produce a consequence which was never "contemplated," Mr. Dawson explained, were in reference to the canons of interpretation, under the Act of 1889, of Statutes and Charters. In the next clause the opinion went on to say: "It "would have been very simple, either to have "adopted the words 'he or she' 'his or her' in "the Charter and the By-laws" (those of 1887 and 1889) "where the words 'he' and 'his' "alone occur, or to have provided therein that "the masculine should include the feminine." Mr. Little also dealt with two very important instances of public bodies, namely, the "London University" and the "College of Physicians," who were desirous to admit women to membership, respecting whose action he wrote as follows: "The proceedings which have taken place with "regard to two other chartered bodies are in-"structive, and fortify me in the opinion I have "formed. In the charter granted to the London "University 6th January 1863, no word is used "showing any distinction in sex until section "37. In section 41, it is provided that the "Chancellor, Fellows, &c., shall have power to "examine *Candidates* and grant certificates, and "at the conclusion of every examination of the "candidates, the examiners shall declare the name "of every candidate whom they shall have deemed "to be qualified to receive such certificate, and "*he* shall receive a certificate in which the branch "or branches of knowledge in respect of which *he* "has been allowed to obtain the certificate shall "be stated. The masculine *him* is also used in "sections 37 and 39 with regard to the conferring "of degrees. When it was desired to admit "women to examinations and degrees at the Uni-"versity, the Council evidently did not consider "that the general provision in the Charter to "admit 'persons' and 'candidates' empowered "them to extend the privilege to women, and "consequently a new supplemental Charter was "applied for and granted in 1878, which by "section 5 provided, 'We grant that all powers "and provisions relating to degrees and certifi-"cates of proficiency contained in the Charter of "6th January 1863 shall henceforward be read "and construed as applying to women as "well as to men.' These Charters are to be "found at the commencement of the annual "calendar of the London University, and it "is very difficult to see on what ground women "should not have been admitted to examination "and membership of the University under the "Charter of 1863 without the necessity of a new "Charter, if the contention now raised that women "are admissible to examinations and membership "of the R.I.B.A. under their existing Charter and "By-laws is well founded. It is, I think, obvious

"that those who advised the London University "that a new Charter was requisite to legalise the "admission of women to their privileges, would "be of the same opinion with regard to the "powers of the R.I.B.A. under their existing "Charter." "The other case," Mr. Little continued, "is the Charter of the Royal College of "Physicians, 10 Hen. 8, which used masculine "terminology throughout. This Charter was "confirmed by statute 14 & 15 Hen. 8, c. 5, and "it was deemed necessary to pass an Act of Par-"liament—viz. the Medical Act 1876—to extend "the power of the College to the granting of "medical certificates to women." The counsel then went on to put forth the arguments which might be urged on the opposite side, and replied to each one in an instructive manner. Finally, in his last clause he repeats his opinion in the following words: "On the whole, therefore, it "appears to me that the balance of reason and "argument is on the side of those who contend "that women are not now legally admissible "under the terms of the Charter and By-laws." Having quoted the salient clauses from an able counsel's opinion, it appeared to him (Mr. Dawson) to be most desirable that the Institute, and the Council especially, should not occupy anything like a false position upon this question, but that they should be reasonably assured that the action they were taking was strictly legal. Therefore he would ask whether, on the broad grounds of wise expediency, and for the purposes both of feeling sure of their own ground and of meeting the reasonable objections and doubts of those members who differed from them, the Council would accept his motion and consent to obtain the opinion of some Queen's Counsel of the highest standing, whose opinion would command general acceptance, so as to place the question beyond reasonable doubt; and that, if they should be so advised hereafter that some Parliamentary action was necessary, they should take such further steps as might be necessary to put themselves and the Institute in a position of legal security.

Mr. DAWSON then moved his resolution in the terms set out at the beginning of this report.

Mr. J. DOUGLASS MATHEWS [*F.*] said he was in hopes that it would have been unnecessary for this Resolution to be proposed or seconded; that it would have so commended itself to the Council that they would have adopted it and been glad of the opportunity to ensure that what had been done was perfectly legal. It was all-important to everybody concerned that legal opinion should be obtained upon which they could act. He had every respect for the members of the Council, both as architects and as men of business, but members must go higher than the Council for their law, and this was purely a legal matter. It was only right that members should be assured that the Council's action was legal, and he was sure the Council themselves would be glad to find that what had been done was legal. The proposition was a very mild, and just, and reasonable one, and he hoped it would be carried.

The HONORARY SECRETARY pointed out that counsel's opinion could generally be got either way, according as the case was laid before him. The weak point in the opinion of Mr. Dawson's counsel as quoted was that he relied solely on the By-laws, and not on the Charter. The By-laws, however, were subject to change. It was only in the By-laws that the word "he" was employed. The Charter carefully omitted any reference to sex; it simply said "every person" or "any person." If the question were submitted to counsel, and his attention drawn to the difference between the Charter and the By-laws, they could no doubt get an opinion directly opposite to that of Mr. Dawson's counsel. The question was, did the general body of the Institute desire to exclude ladies? There could be no reasonable objection to counsel's opinion being sought if there was the slightest suspicion that the Council's action was illegal. It was a great pity, he thought, that the objection had not been taken earlier. The fact that this lady was a candidate for election had been mentioned in the JOURNAL, and it was a member's own fault if he was not aware of it. A few years ago Mr. Ernest George, on the lady's behalf, asked the Council whether there would be any objection to her becoming a member of the Institute if she passed the examinations; and the Council, taking the word "person" in the Charter to mean either man or woman, answered that she could become a member. She had been put to the expense of studying architecture, had passed the examinations exceedingly well, and was duly elected. Then there came the objection.

Mr. DAWSON said that objection had been taken on the nomination. Members had no power to object earlier.

Mr. HUGH STANNUS [*F.*] said he had thought that Mr. Dawson was anxious only that the action of the Council should be placed on an unassailable legal footing; but, after his speech that evening, one saw that his objection was not so much to a want of legality in the Council's action, but because he objected to a woman being allowed to practise in their profession. Mr. Dawson admitted that ladies could do good office work; but as regards other duties he (the speaker) supposed one of his objections was that they could not ascend ladders. Did Mr. Dawson himself go up ladders? [Mr. Dawson, replying, said that he would retire from the profession if he could not.] Mr. Stannus thought that a very small proportion of members of the profession over the age of 60 were in the habit of ascending ladders. Anyway the duty could very well be deputed to a capable assistant. It was much to

be regretted that the Resolution had been proposed and seconded on the grounds brought forward by Mr. Dawson. His reasons indeed savoured more of a Sheffield trade union. Again, Mr. Dawson made a great point of the masculine terminology being used. But when a woman went to church, was she not included in the parson's "dearly beloved brethren"? One could not help feeling regret that at a time when in so many professions freedom was "broadening slowly down from precedent to precedent" members should desire to make the Institute a close corporation. He begged to move as an amendment that the Royal Institute of British Architects do approve of the action of the Council in interpreting the word "person" as "person."

The amendment, seconded by Mr. H. Hoyne Fox [*F.*], was thereupon put from the chair, and voted upon by show of hands, when there appeared to be twenty-four in its favour and twenty-four against. A division being called for, the Ayes and Noes divided, and Mr. Dawson and Mr. Stannus acted as tellers. On reassembling, the numbers were announced to be as follows:—

For the amendment	27
Against	27

Mr. JOHN SLATER [*F.*] thought that under the circumstances it would be wiser for the Council to adopt Mr. Dawson's motion. It was a pity that anything should be done that had the slightest tinge of illegality. He would therefore suggest that, as the division was so close, the Council should adopt Mr. Dawson's advice and seek counsel's opinion.

Mr. W. M. FAWCETT, *Vice-President*, pointed out that the lady had been duly elected, and if they got counsel's opinion, that would not help them out of the difficulty. The only way to decide the matter was by court of law. If any one had an objection to what had been done, let him commence an action at once.

Mr. DAWSON said he knew there might be some hostile members disposed to move the Court for an injunction. But that was the very thing he wanted to avoid, and therefore he asked that the Council should get the opinion of an eminent barrister upon the question.

The PRESIDENT said that as he had the casting vote, he should give it in favour of the Council; but, at the same time, he thought it would be a judicious thing to get a supplementary Charter which should place the whole matter beyond a doubt.

Mr. JOHN HEBB [*F.*] hoped the Council would have the courage of their opinion and stand firm. Counsel's opinion would not decide the legality of the action at all.

Mr. Stannus's amendment, which was declared carried by the President's casting vote, was then put from the chair as a substantive motion, with the following result:—

For the amendment as a substantive motion	26
Against	25

The Brickwork Experiments.

Mr. OWEN FLEMING, at the same Meeting, duly brought forward the motion standing against his name in the notice-paper—viz.

> "That the attitude of the Council towards the Brickwork Experiments recently conducted by the Science Standing Committee is calculated to impair public confidence in the Royal Institute, and that the Council therefore be invited to take such steps as may be necessary to bring the matter to a satisfactory conclusion."

These brickwork experiments, Mr. Fleming said, began as far back as 1893, and he intended very briefly summarising their history in order that the Meeting might realise the somewhat extraordinary state of affairs that had arisen. In 1893–94 the Science Committee, to whom the matter was entrusted, reported as follows: "That in order that accurate information may be obtained as to the strength of brickwork, a series of experimental tests be undertaken, and that funds be obtained for that purpose." A subscription list was started, and it was this list that really was the basis of the action he was now taking. If this had been simply a matter within the walls of the Institute, and the honour of the Institute as a whole had not been concerned, he should have regarded it purely as a matter for the consideration of the Council and the Science Committee, and he should not have moved. But the Council or the Science Committee (he was afraid he could not distinguish between them) went outside the Institute and asked for subscriptions from members of the public to carry out experiments as to the strength of brickwork with a certain definite object and aim; and they received those subscriptions, which were entered in the books of the Institute. The acceptance of these subscriptions carried with it a responsibility which, he regretted to say, had been too lightly regarded. What had been the response of the Institute to the generosity of the public? He would go on with the history and let the facts tell their own unhappy tale. In the next year (1894–95) the Science Committee reported that they had taken certain action, and proposed to carry on experiments by which it was intended to establish what ratio existed between the strength of individual bricks and that of brickwork composed of similar bricks in different kinds of mortar. That was the aim set forth in the official Report of the Science Committee for 1894–95. There were to be three series of tests. The first series were reported to the Institute on the 30th March 1896, when

there was a long discussion, and the Chairman of that Meeting stated that "in the course of time we should no doubt have a very valuable text-book on the subject." It would thus be seen that at this time the Committee, the Chairman, and the Institute all intended that the matter should be carried to a definite conclusion and embodied in a book. The intention was perfectly clear. In 1895–96 the Science Committee in their Annual Report again referred to the completion of the first series, and stated that "when further experiments are completed the Committee expect to be able to lay before the Institute detailed and reliable information from which general conclusions may be arrived at with regard to the strength of brickwork of various descriptions at different stages." Still a definite object and aim set forth—viz. experiments leading up to a conclusion. On the 14th December 1896 the second series of experiments were reported, and the Committee then stated that when the third series of experiments were completed the Committee would be in a position to make another final report upon the whole series, and expected to be able to establish from the data derived from the experiments definite rules as to the safe loads for the various kinds of brickwork with which they had been dealing. Turning to the report of the Science Committee for 1896–97, they were informed that the Science Committee hoped in due time to issue in pamphlet form the results of the whole series of experiments—still the same line of thought as before. On the 13th December 1897 a slight change was observable in the ideas governing the persons who were conducting these series; and the Institute was informed in the Science Committee's final report that "The Committee do not propose at present to give any fixed rules based upon the results or information gained by these experiments, as it is hoped that the Council will sanction"—this was the first time in connection with this matter that the Council and the Science Committee were referred to as two different bodies—"the preparation of a careful analysis of the facts contained in the three Papers, and issue the same in a suitable shape. If this is done it may be possible to generalise and formulate rules which should govern the use of different kinds of brickwork as the supporting features of the structures erected under our superintendence." The Committee then proceeded to give a few of the impressions they had derived from the three tables; but they stated that these were only general assumptions, which required further consideration. Up to this time everything had been harmonious, but now discords became apparent. It was necessary to trace the early history of these discords, and to lay bare the influence which had ultimately brought about the present state of affairs. It was very peculiar that, upon the discussion of this third series, a member of the Science Committee thought it necessary to state that the arrangement of the experiments was carried out by a sub-committee under the direction of the Science Committee. Surely the Science Committee were responsible, and it was rather an unusual thing for a member to make that statement. But this member went on to say that there was really no report which could be called a Report of the Committee—that the Report before them had been made by two members of the Committee. "Personally" (this member said) "he would rather have discussed the analysis of the results in the Committee beforehand." That seemed an extraordinary state of affairs. A committee had been meeting and testing the brickwork, and they make a final report, whereupon a member of the Committee gets up and expresses his regret that he had not had an opportunity of discussing the matter in Committee beforehand. He did not know whether any member of the Council or of the Science Committee would explain that state of affairs. But from this time the Council—should he say became shy; from this moment the Council and the Science Committee seemed to drift apart, and it became evident that there was a gradual straining of the relations between the Council and the Committee. That was not a matter the Meeting could go into, except that the result was that the Institute as a whole was still waiting for some definite conclusion as to the Brickwork Experiments. In the Science Committee's Report to the Council for 1897–98 the Committee wrote:—"The Committee are awaiting the decision of the Council as to publishing an account of the whole of the experiments in an octavo form." The Council, following their own line of action, cut that out altogether. At the General Meeting that was protested against; the Meeting held that the Council ought not to have cut a portion of the Science Committee's Report out without giving some reason; and ultimately the chairman of that Meeting replied that the clause was omitted from the Report because it was, "in the opinion of the Council, premature. It involved a very large and important question of expenditure, which had to be considered by the Finance Committee, and as there was need for further revision, and the proposal would entail very heavy expenditure indeed, it was thought that the question, being still undecided, would be referred back to the Committee to make further inquiries; and it was therefore premature to bring the matter in its present state before the Institute." The Meeting would not accept the mutilated report, and inserted the following footnote, which appeared in the JOURNAL when the Report was published:—"The question of publishing an account of the whole of the experiments and results in octavo form is being referred to the Council for their decision." This brought the matter up to the summer of 1898. One

would have thought that the feeling expressed at that General Meeting would have enabled the Council to realise that their policy was not acceptable—that the Institute, in fact, had an undischarged responsibility to the members of the public who had subscribed to have these experiments made. But the hint was of no avail. The Council persisted in their attitude, and their next step was really astounding. They decided that the experiments might be published. On what condition? On condition that the name of the Institute was not mentioned from cover to cover of the publication. That scarcely seemed to leave the matter in a position satisfactory to members of the Council themselves. He had ventured to suggest that in a letter to the Council, but only received a *non possumus* reply; so that ultimately he was forced—that was the only word he could use—to put this motion down on the paper. It was a most unpleasant position for any member of the Institute to have to criticise the action of the Council; but what was there to be done? Was the matter to remain in this position? Were they, as an Institute who had set their hands to a task, to carry out certain experiments to form some idea of what brickwork would carry—were they to confess their impotence to bring their undertaking to a conclusion? It was impossible, and therefore he ventured to hope that the Council would see their way to take the matter up in a business-like way, and to bring it to a conclusion which would be worthy of the Institute and its members.—Mr. Fleming concluded by formally moving his resolution.

Mr. C. H. Brodie [*A.*] seconded the motion. Mr. Fleming had made out an extremely good case for it, and it was quite impossible to leave the matter where it then rested. In inviting the Council to take such steps as might be necessary to bring the matter to a satisfactory conclusion, he would suggest a rider being added to the effect that the Council should instruct the Science Committee to immediately proceed with the publication of those results in book or pamphlet form, with the addition of certain conclusions which the Committee, who had so carefully watched those experiments, were quite capable of formulating. No other result should be looked for than that. As to the expense, the sale of a publication containing such valuable information would more than pay the cost of producing it. He did not think the action of the Council in the matter had been at all consonant with the dignity of the Institute or the respect due to one of their Standing Committees elected by the general body in the same way as the Council themselves were.

The President, on behalf of the Council, said they were not at all satisfied with the conditions under which the experiments were made. The Council had given Mr. Max Clarke full permission to publish the conclusions arrived at; but the Council could not give their *fiat* that the experiments were of such a nature as to lead to definite conclusions.

The Hon. Secretary, replying to an observation by Mr. Brodie that the Council distrusted the Science Committee, said that was not the case. The fact was, Professor Unwin, a member of the committee which had undertaken these experiments, said that they were unsatisfactory and unreliable—that they were carried out under peculiar circumstances which did not give a satisfactory and final conclusion as to what brickwork would stand. That was an opinion which the Council could not resist.

Mr. Brodie said that he was quite aware of Professor Unwin's opinion; but Professor Unwin, of whom he spoke with all possible respect, had made a statement that certain materials used in the experiments were of a different character from what they were. It was proved to Professor Unwin that those materials came from precisely the same heaps, yet he declined to withdraw his expressed opinion.

Mr. Fleming's motion was then put from the Chair, and carried by a majority of eight, 24 voting in its favour, and 16 against it.

The Hon. Secretary, having remarked upon the indefiniteness of the motion, and what would be considered a satisfactory conclusion, Mr. Beresford Pite suggested that Mr. Fleming should be invited to state by letter what he wished the Council to understand by the words "bring the matter to a satisfactory conclusion," and then the Council would have it before them at their next meeting.

Mr. Brodie pointed out that the rider he had suggested would meet the case. The matter should be sent to the Science Committee to deal with. They had carried out the experiments and knew all about them, and the Council did not. The Committee were the proper people to bring the matter to a satisfactory conclusion.

Secret Commissions.

The report of the Special Committee of the London Chamber of Commerce on the subject of Secret Commissions has been issued. The report emphasises the "heinousness of the system of secret commissions and its detrimental effect upon morals and business," and says the mass of corruption which the evidence before the committee shows to exist may appear to some persons so great and complex as to render it hopeless to struggle towards purity. The committee, however, do not take this view of the matter, and accept the improvement which has come about in the last fifty years as a fact full of encouragement for the commercial community of Great Britain. If legislation is to be attempted to check the abuses which still remain, "it appears to the committee," the report continues, "that such

legislation should render criminal the payment and the receipt, the offerings and the solicitation, of any corrupt payment, and also the giving of any invoice or other document calculated to enable the recipient to commit a fraud upon his principal, and that it is expedient that such legislation should be initiated by the London Chamber of Commerce or supported by them." The committee further suggest that all professional and trade bodies (such as those representing the medical, legal, artistic, and other professions and trades) be recommended to make an emphatic declaration on the subject of secret commissions, and adopt the course already taken by the Royal Institute of British Architects, the Institution of Civil Engineers, and other bodies, by inserting into their by-laws a stipulation that any member guilty of the pernicious practice will be expelled the society by the council. In order to make such a provision effective this would, it is added, require the aid of the public as well as of the members of the several professions and trades.

In view of the above, the following letter, which has been received by a Fellow of the Institute and forwarded by him to the Secretary, is instructive. The public, as well as such firms as Messrs. Geo. Wright & Co., ought to be made to learn that every member of the Royal Institute of British Architects subscribes to the following declaration: "I promise and agree that I will not accept any trade or other discounts, or illicit or surreptitious allowances, in connection with any works the execution of which I may be engaged to superintend, or with any other professional business which may be intrusted to me." The letter referred to is as follows:—

1/3/1899.

DEAR SIR,—As we notice in the *Building News* that you are the architect for the extension of the Club premises, we have ventured to send you by same post a copy of our illustrated catalogue of new tables and billiard-room furniture, and beg to enclose herewith list of a few second-hand tables—some of which have only been in use a short time and are quite equal to new—and shall esteem it a great favour if you would kindly hand same to the Secretary and use your influence on our behalf; and in the future we shall be most happy to allow you a discount of 5% off any orders you may be able to place with us. We would specially draw your attention, &c. . . .

Trusting to be favoured with your esteemed commands, which shall have our best attentions,

We are, Sir, Yours obediently,
GEO. WRIGHT & Co.

The late Thomas Rowe [*F.*].

Mr. G. Sydney Jones [*A.*], Hon. Secretary of the Institute of Architects of New South Wales, sends news of the death of Mr. Thomas Rowe [*F.*], which occurred at Sydney, N.S.W., on the 14th January. The following note of the life and professional work of the deceased has been kindly furnished by Mr. Jones:—

Mr. Rowe was founder, in 1871, of the Institute of Architects of New South Wales, and for several years, and again recently, occupied its presidential chair. That institution owes much to his care and thoughtfulness. In 1884 he was elected a Fellow of the Royal Institute of British Architects. Born in Penzance, Cornwall, his father being a builder and contractor, Mr. Rowe was educated at Barnes Academy, and in 1848, after some years of work in his father's office, he left England for Sydney. For some time he underwent the usual goldfield experience, and then settled down to work as an architect in 1856. Amongst Mr. Rowe's many works in and around Sydney may be mentioned warehouses for Messrs. Hoffnung & Co., Messrs. Vickery & Co., and others; Newington College; the Royal Arcade, the Sydney Arcade, and the Imperial Arcade; St. George's Church; the Jewish Synagogue; the Centenary Hall; and many others of greater or less note. Mr. Rowe was colonel of the Volunteer Corps of Engineers, was for some time alderman of the City of Sydney, and for years was president of the Metropolitan Board of Water Supply and Sewerage, in which capacity he rendered valuable service to the community. The deceased gentleman was in his sixty-third year.

The late Haywood Richardson Brakspeare [*F.*].

Mr. G. R. Eyre has kindly communicated the following particulars of the professional career of Mr. H. R. Brakspeare [*A.*], whose death, which occurred at his residence, Wembley, near Harrow, on February 14, was announced in the last issue of the JOURNAL:—

Mr. Brakspeare was connected with the Metropolitan Board of Works and the London County Council for a period extending over eighteen years. Previous to his coming to London he received his professional education in the office of his father, who had a large practice, principally in ecclesiastical architecture. Mr. Brakspeare was architect for the Wembley Urban Council offices and for several private residences in the neighbourhood. He also prepared the plans for the enlargement (now in progress) of Wembley Church, of which church he was formerly a churchwarden. His high character and devotion to everything he undertook will ever be remembered by those with whom he came in contact.

REVIEWS.

BEVERLEY MINSTER.

Beverley Minster: an Illustrated Account of its History and Fabric. By Charles Hiatt, Author of "Chester: the Cathedral and See," &c. 8o. Lond. 1898. *Price* 1*s.* 6*d.* [*Messrs. George Bell & Sons, York Street, Covent Garden.*]

"Beverley Minster," says Sir Charles Anderson, in a careful comparative estimate of the English churches, "is for its size, taken as a whole, internally and externally, the most perfect church

in England." He might have added that the interior of the choir and transepts is unsurpassed in Europe. It represents the high-water mark of Early English Gothic. In England its only contemporary rival is to be found in the presbytery of Ely; but the Ely architect was cramped by the contiguity of the Norman choir, and his design is inferior in proportions to that of Beverley. Professor Freeman was of opinion that the interior held its own, even in comparison with such giants as Lincoln and York. Its eastern limb is unmatched by anything in Lincoln except the Angel presbytery; while in everything but vastness

From a photo. by Wilfrid Groom.

ST. MARY'S CHURCH, BEVERLEY.

of scale it far surpasses York. Like Lincoln and like York, it possesses the grand feature, externally, of a continuous sky-line; of a single high roof running uninterruptedly from west to east. Internally, perhaps, the roofs of Salisbury and Wells, sinking eastward by slow gradations, give more fairy-like effects. Such roofs as the latter, climbing centrally, demand, as the later architects of Salisbury saw, a central tower and spire. Beverley Minster, as the great thickness of the piers of the crossing shows, was also designed for a central tower and spire. This, however, was afterwards seen to be unnecessary, and was never built. It may well be that the designers were confirmed in their determination to omit the central tower by the fact that the central transept was slipping northward; it was screwed back *c.* 1720. But though Beverley lacks a culminating centre, yet, as in Westminster, the want of it is largely compensated for by a pair of tall western towers. Internally, the one defect is that there is no longitudinal ridge-rib to connect together the separate compartments of the high vault; how valuable in welding the bays of a long church into unity may be seen by comparing the high vaults of Westminster and Exeter with those of Beverley and the French cathedrals, most of which, e.g. Amiens, exhibit the same defect. On the other hand, the fact that the vault springs unusually high, at once clears the windows of the clerestory and greatly adds to the apparent height of the church.

Beverley and York, Gloucester and Tewkesbury, Ely and Peterborough, seem to me to belong to a series of pairs of churches in which there was an internecine rivalry; in Gloucester and Tewkesbury of a friendly character; in the others the reverse. Ely built a nave of twelve bays; Peterborough, so to say, went one better—pulled down the west front which had been commenced, and secured a length of 211 feet against the 208 feet of Ely. York put up western towers; Beverley set to work at once to copy them; the Beverley towers are much lower, but they are so slender that they really look the taller pair. York has a continuous

roof; so has Beverley. York has double aisles to its central transept—a very rare feature—so has little Beverley; and what is more, it has an aisled eastern transept, whereas York has nothing to show but a north and south bay window. On the other hand, York has a central tower; honours are divided.

The Minster has greatly fallen from its high estate; the sister-churches, Southwell and Ripon, have regained their old rank as cathedrals. Beverley Minster is, we believe, in the hands of the Simeon trustees: its staff of provost, canons, chantry-priests, sextons, incense-bearers, and the rest—seventy-seven all told—has dwindled down to vicar and curates, and little is left of an income worth in our money some £20,000 per annum. Mr. Hiatt has had the advantage of the researches of Mr. Arthur Leach and Mr. John Bilson, and writes with commendable enthusiasm of the beautiful Minster and of the fine parish church. A few points seem to need revision. He tells us that the Minster was served by "secular canons." To the lay mind this conveys no meaning; monk and friar, regular and secular, to him are both alike. None of the authors of these handbooks follow the excellent precedent set by Mr. Thomas Blashill in his guide to Tintern, in explaining, briefly but clearly, the constitution and character of the monastic body by and for whom the church was built. This leads Mr. Hiatt to lose the whole point of the most interesting of the misereres. Seven of those in the Minster are satires on the Grey Friars and Black Friars who had settled in Beverley, and whose work in the slums was about as highly esteemed by the Established Church as that of the Salvation Army nowadays. On the

From a photo. by Wilfrid Groom.

THE TRIFORIUM AND CLERESTORY.

other hand, St. Mary's parish had constant trouble with the unjust pretensions of the neighbouring Cistercian Monastery of Meaux, and dresses the foxes of the misereres in Cistercian hoods. Professor Freeman is quoted to the effect that "an eastern transept is a feature purely English;" whereas it occurs first in the great church of Cluny and in St. Benoit-sur-Loire. On page 36 we are informed that "the building of the Minster practically ceases between the years 1340 and 1350;" on page 44, that the Beverley towers were probably commenced after the York towers—*i.e.* after 1443, but finished probably earlier—*i.e.* before 1475; both statements cannot be true. Mr. Hiatt prefers the west window of Beverley—a perpendicular grille—to the flowing tracery of the west window of York, which most people had imagined to be unsurpassed in England, unless by the east window of Carlisle. On page 37 he assures us that "so long as the Minster is controlled by the present authorities it is little likely to suffer from needless architectural experiments or fantastic and capricious structural alterations." The photograph on page 68 shows a miserable little box of organ-pipes with which "the present authorities" have disfigured Sir Gilbert Scott's beautiful screen. Mr. Hiatt is good enough to give another testimonial (page 135) to the clergy of St. Mary's. Our own private opinion is that there is not a parson in the country who is to be trusted with a church. Is there not a proposal to clean up the interior of Westminster Abbey? And how long is it since a clergyman proposed to turn the fire-engines on to the exterior of St. Paul's? We are sorry to find that the author finds the little town of Beverley "singularly unattractive," "its streets unlovely." Nestling at the foot of the Wolds, the view across the red-tiled roofs of the quaint old market-place, encircling a picturesque market-cross, on to the grey tower and battlements of St. Mary's, set in umbrageous elms, the street eastward spanned by a mediæval bar-house, beautiful in colour, and expanding into an avenue of grand old trees, has a most pleasant place in our memory. On page 18 "Maldon Priory" should read "Malton;" on page 40, "the pairs of the nave" can hardly be correct. A plan of St. Mary's Church might well be added. FRANCIS BOND.

MINUTES. IX.

At a Special General Meeting, held Monday, 6th March 1899, at 8 p.m., Professor Aitchison, R.A., *President*, in the Chair, with 20 Fellows (including 8 members of the Council) and 37 Associates, 3 Hon. Associates, and several visitors, the President moved that, subject to Her Majesty's gracious sanction, the Royal Gold Medal for the promotion of architecture be presented this year to Mr. George Frederick Bodley, A.R.A., for his executed works as an architect. The motion having been seconded by Mr. William Emerson, *Hon. Secretary*, it was

RESOLVED that, subject to Her Majesty's gracious sanction, the Royal Gold Medal for the promotion of architecture be presented this year to Mr. George Frederick Bodley, A.R.A., for his executed works as an architect.

The meeting then terminated.

At the Ninth General Meeting (Business and Ordinary) of the Session 1898–99, held Monday, 6th March 1899, at the close of the Special General Meeting above referred to, Professor Aitchison, R.A., *President*, in the Chair, with members and visitors present as above recorded, the Minutes of the Meeting held 20th February 1899 [p. 241] were taken as read and signed as correct.

The decease was announced of Mr. Thomas Rowe, of Sydney, N.S.W., *Fellow*, elected 1884.

The following candidates for membership in the various classes were elected by show of hands:—

As Fellow.

SAMUEL PERKINS PICK [*A.*] (Leicester).

As Associates (14).

WALTER HARGREAVES BOURNE [*Probationer* 1895, *Student* 1897, *Qualified* 1898] (Darlington).
WILLIAM ALPHONSUS SCOTT [*Probationer* 1889, *Student* 1895, *Qualified* 1898] (Drogheda, co. Louth).
ERNEST JESSE MAGER [*Probationer* 1894, *Student* 1895, *Qualified* 1898].
GEORGE REAVELL, jun. [*Qualified* 1898] (Alnwick).
JOHN HENRY ARTHUR PHILLIPS [*Probationer* 1894, *Student* 1896, *Qualified* 1898].
ARTHUR MARYON WATSON, B.A.Lond. [*Probationer* 1889, *Student* 1894, *Qualified* 1898].
JOHN CUBBON [*Probationer* 1892, *Student* 1894, *Qualified* 1898] (Manchester).
HARRY INIGO TRIGGS [*Probationer* 1892, *Student* 1898, *Qualified* 1898].
FREDERICK ROBERT HIORNS [*Probationer* 1895, *Student* 1896, *Qualified* 1898] (Margate).
JOHN KIRKLAND [*Probationer* 1889, *Student* 1892, *Qualified* 1898].
EDWARD FROST KNIGHT [*Probationer* 1896, *Student* 1897, *Qualified* 1898].
HARRY DIGHTON PEARSON [*Probationer* 1890, *Student* 1891, *Qualified* 1898].
LESLIE WILLIAM GREEN [*Probationer* 1891, *Student* 1897, *Qualified* 1898].
HENRY TANNER, jun. [*Probationer* 1895, *Student* 1896, *Qualified* 1898].

As Hon. Corr. Member.

PROF. COMMENDATORE FELICE BARNABEI (Rome).

Mr. Henry Dawson [*F.*], having stated certain objections to ladies entering the profession of architecture and being admitted members of the Institute, proceeded to question the legality of a recent election of a lady to the Associateship as being contrary to the Charter and By-laws, supporting his contention by quotations from the opinion of a barrister to whom he had submitted the question, and finally moved that the Council do obtain the written opinion of an eminent Queen's Counsel of independent position as to whether women are eligible for election as Associates or Fellows under the existing Charter and By-laws, and that the Council communicate such opinion to members at the earliest convenient date. The motion having been seconded by Mr. J. Douglass Mathews [*F.*], an amendment was moved by Mr. Hugh Stannus [*F.*] that the Institute do approve the action of the Council in interpreting the word "person" as "person." Upon a show of hands 24 voted in favour of and 24 against the amendment. A division being called for and taken, the numbers were declared to

be 27 for and 27 against. The President, having given his casting vote in favour of the amendment, put the amendment as a substantive motion, which was carried by a majority of one—26 voting for and 25 against it.

Mr. Owen Fleming [*A.*], having summarised the history of the Brickwork Experiments conducted by the Science Standing Committee, moved that the attitude of the Council towards such experiments was calculated to impair public confidence in the Royal Institute, and that the Council therefore be invited to take such steps as may be necessary to bring the matter to a satisfactory conclusion. The motion, having been seconded by Mr. C. H Brodie, was put from the chair and carried by a majority of 8—24 voting for and 16 against it.

Mr. H. Hardwicke Langston [*A.*] stated that, owing to the lateness of the hour, he would postpone the motion of which he had given notice until the next business meeting.

A paper by Mr. Arch. C. Dickie [*A.*], on SOME EARLY CHRISTIAN CHURCHES IN PALESTINE, having been read by the author, and illustrated and explained by plans and views shown by the lantern, a vote of thanks was passed to the author by acclamation.

The proceedings then closed, and the meeting separated 10.25 P.M.

Obituary.—The death is regretfully recorded of Mr. Tom Turner, of 18 Provost Road, Haverstock Hill, N.W., who was elected Associate in 1896.

ARCHITECTS' BENEVOLENT SOCIETY.

Annual Report of the Council.

Adopted at the Annual General Meeting held on the 8th March 1899.

The Council of the Architects' Benevolent Society, in presenting their forty-ninth Annual Report, have the pleasure of congratulating the members of the Society on a year of useful work, in which much has been done to relieve the necessities of deserving applicants, the sum of £654 14*s.* 10*d.* having been distributed amongst thirty-nine persons. They have also to report that there has been an increase in the amount received in subscriptions (£471 10*s.* as against £459 13*s.* received in 1897), and that the following gentlemen have added their names to the list of annual subscribers: Mr. Cecil Orr, Mr. E. Monson, Mr. H. Huntly-Gordon, Mr. Sydney Perks, Mr. H. Alexander Pelly, Mr. John Ford, Mr. W. G. Cooke, Mr. H. P. Monckton, and Messrs. Patman & Fotheringham. While there has been this increase in the subscriptions, the Council regret that there has been a considerable falling-off in the amount received in donations, the sum of only £105 12*s.* having been received as compared with £300 17*s.* 7*d.* received in 1897. Amongst the donations the following may be mentioned: Colonel Edis £21, Mr. Aston Webb £15 15*s.*, Dr. R. Rowand Anderson £10 10*s.*, Mr. A. Hessell Tiltman £10, Mr. George Inskipp, Mr. Wm. Woodward, Mr. W. West Neve, Mr. J. T. Christopher, and Mr. G. Elkington, £5 5*s.* each. The Tylers and Bricklayers Company also gave £5 5*s.*, Messrs. Patman & Fotheringham £3 3*s.*, and Mr. Sidney R. J. Smith £3. Various smaller sums were also gratefully received.

The steady increase in the number of subscribers during the past few years (the amount being now more than 50 per cent. in advance of that received in 1892) is however an indication that a growing interest is being taken in the Society, and that the work which it performs in assisting unfortunate architects, their widows and children, is becoming more widely recognised. Still, the Council feel that the number of subscribers (a little over three hundred) is small compared with the number of practising architects who are in a position to contribute to the Society's funds; and they would cordially invite inquiries from non-subscribers as to its scope and objects.

It has long been felt that the Society would be more generally supported if its existence were more widely known, and with a view to extending the knowledge of its aim and work, your Council have recently had under consideration the question of an annual dinner. It was thought, however, that this would be undesirable at the present time, and that the same object might be served if the fiftieth anniversary of the Society, which would occur in 1900, were celebrated by a dinner. A small sub-committee has therefore been formed to make the necessary arrangements for such an event, and your Council trust that the committee's efforts will be heartily supported by members of the Society and by the architectural profession at large.

The proposal carried at the Annual General Meeting last year to increase the number of the Society's pensioners from three to six, and the amount of the pensions from not less than £15 to not less than £20, was confirmed by a subsequent general meeting specially convened for the purpose on the 13th July. The available pensions were therefore duly advertised at the beginning of the present year in the professional papers and *The Times*, and allotted to the most deserving candidates.

The Council have much regret in recording the death of three of the oldest members of the Society, Professor Hayter Lewis, Mr. J. J. Edmeston, and Mr. T. C. Hine. Professor Hayter Lewis, who has bequeathed £100 to the Society, was one of its original members, and one of its most generous benefactors. He served on the Council on many occasions and acted as Honorary Treasurer with advantage to the Society from 1886 to 1889. Mr. Edmeston had been a subscriber since 1860 and had also served on the Council. Mr. T. C. Hine was an original member of the Society and acted as a corresponding member of the Council from 1855 to 1870.

Seven meetings of the Council have been held during the year, the average attendance at each meeting being eight.

The following gentlemen, being the five senior members, retire by rotation from the Council, namely: Mr. Arthur Crow, Mr. E. A. Gruning, Mr. G. T. Hine, Mr. Arthur Cates, and Mr. Aston Webb. To fill the vacancies caused by these retirements, the Council have the pleasure to nominate Sir Arthur W. Blomfield, Colonel R. W. Edis, Mr. Edwin T. Hall, Mr. T. M. Rickman, and Mr. R. A. Briggs.

The Council, in closing their Report, desire to express their sense of the indebtedness of the Society to the Royal Institute of British Architects for office accommodation, &c., and to the officers for their always helpful courtesy.